



Substantiate Structuralism

Give reason for preservation or transformation

Content

Testing to formate a position

A. Theoretical background

B. Urban context in relation to site

C. Building clusters in relation to units

D. Choosing a position

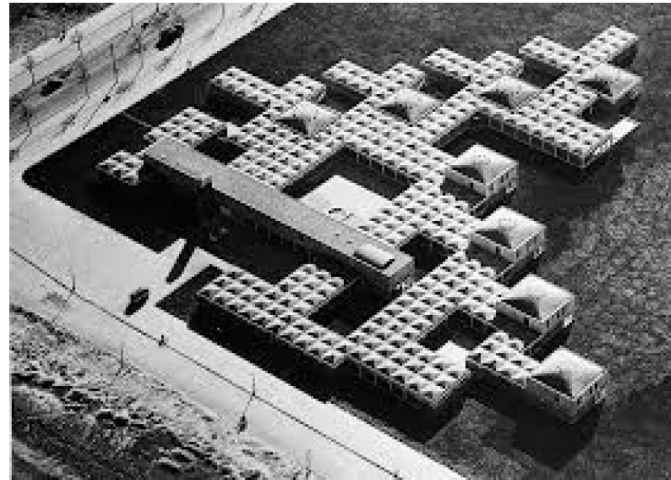
E. Technical details connecting old and new

F. Conclusion: position

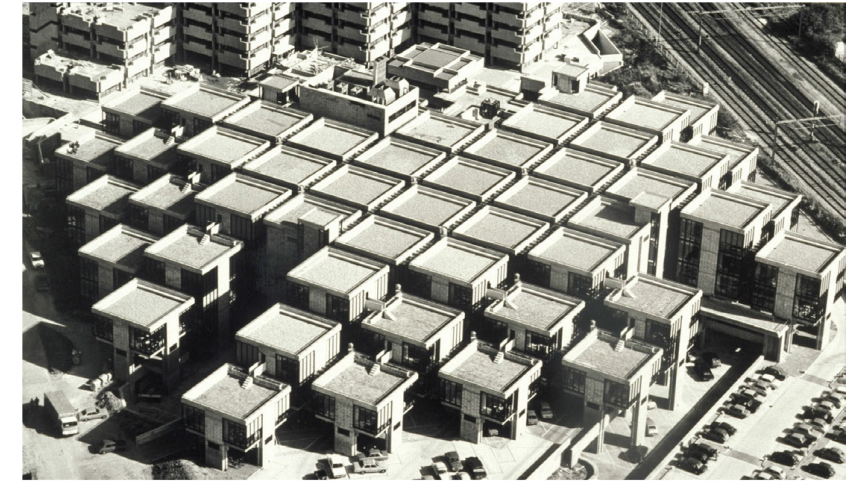
1940



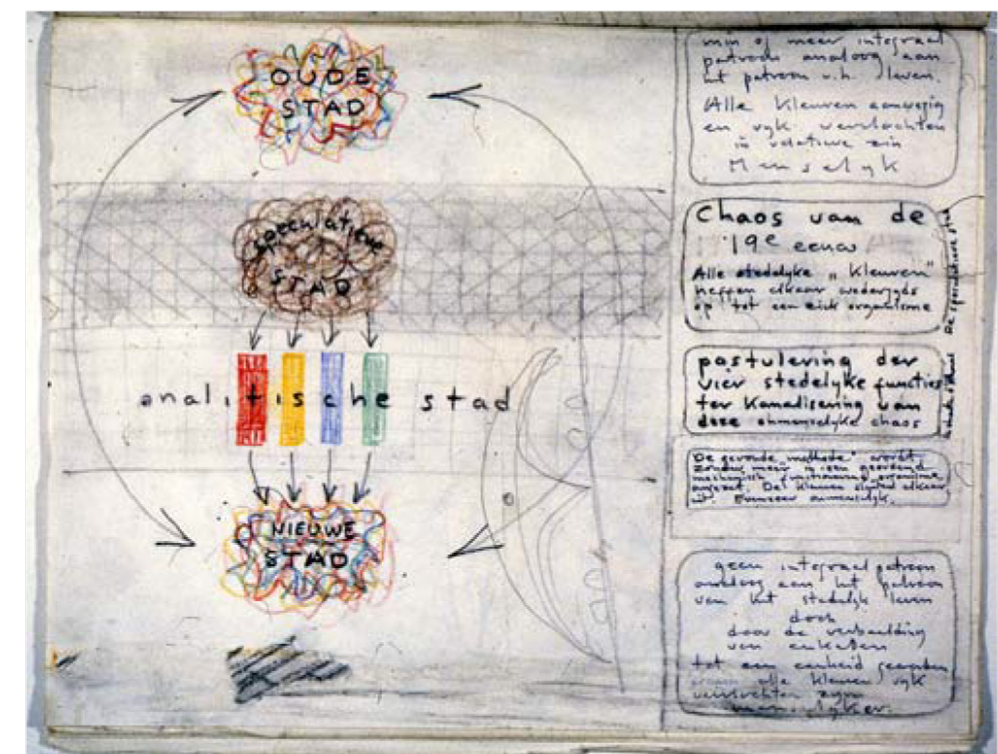
1960



1972



“For all their differences, the team 10 members originally shared an aversion to CIAM’s analytical functionalism and a desire to conceive the built environment in terms of human interrelations and associations”.



Quote. Francis Strauven: (Mellon Lecture 24 May 2007)

Shaping the new reality from the in-between to the aesthetics of number

Fig. Unite d'habitation - Le Corbusier , Burgweeshuis - Adlo van Eyck, Centraal Beheer - Herman Hertzberger

Studio excursion

Units. Flexibility. Building/City. collective interactions

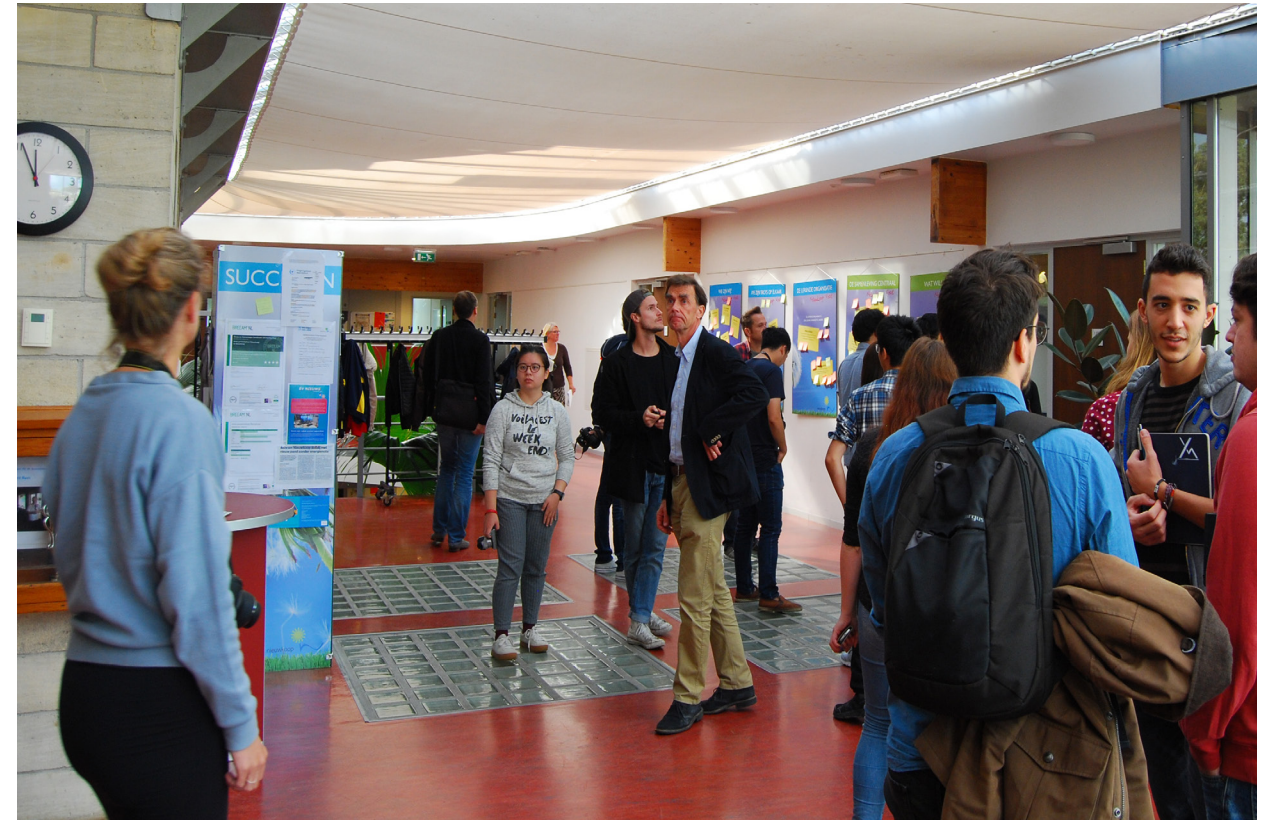
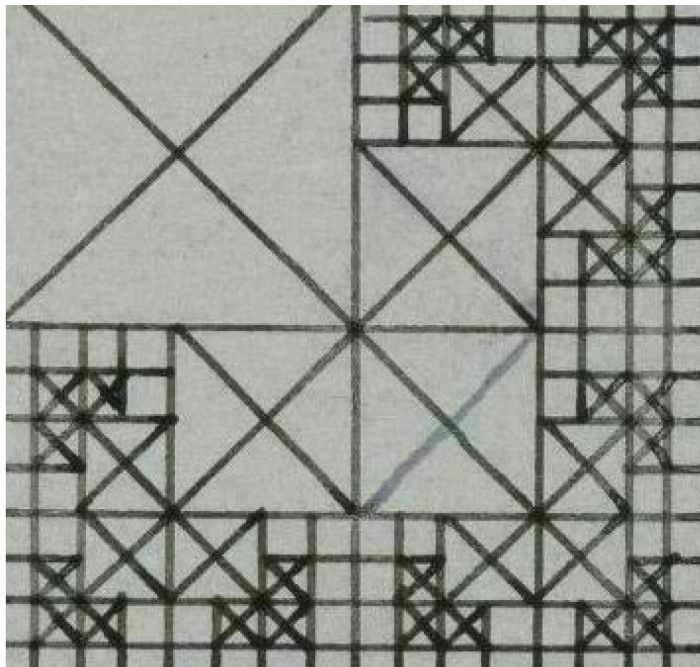


Fig. Exursion photos: t'Karregat, Burgweeshuis

Fig. Exursion photos: Raadhuis Ter Aar, Cubus houses

Getting started

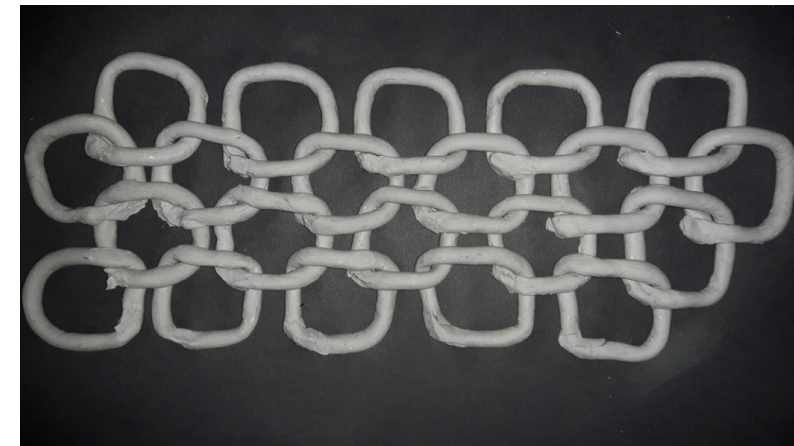
Archive visits, building analysis, concept sculpture.



THEMES



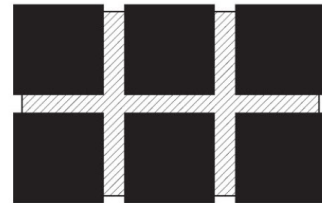
ANALYSIS



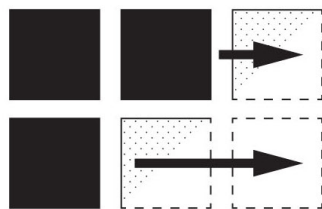
CONCEPT

Personal understanding of the themes

Units



Flexibility



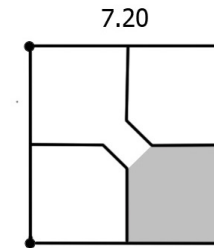
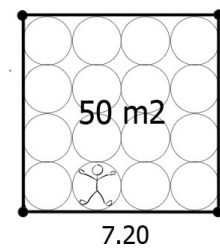
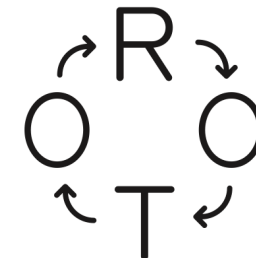
Building/City



Collective interactions



**DE
CON
STRUC
TION**



3D?

“Dialectics is not a method for generating predetermined outcomes but it is a method of study of social process: interrelations, development, transformation”
(Herman Hertzberger).



Fig. Group heritage and building analysis; Msc2 Deconstruction studio; Archive HNI; book: *Architecture and Structuralism The ordering of space*, the Guardian newspaper article: Students with depression

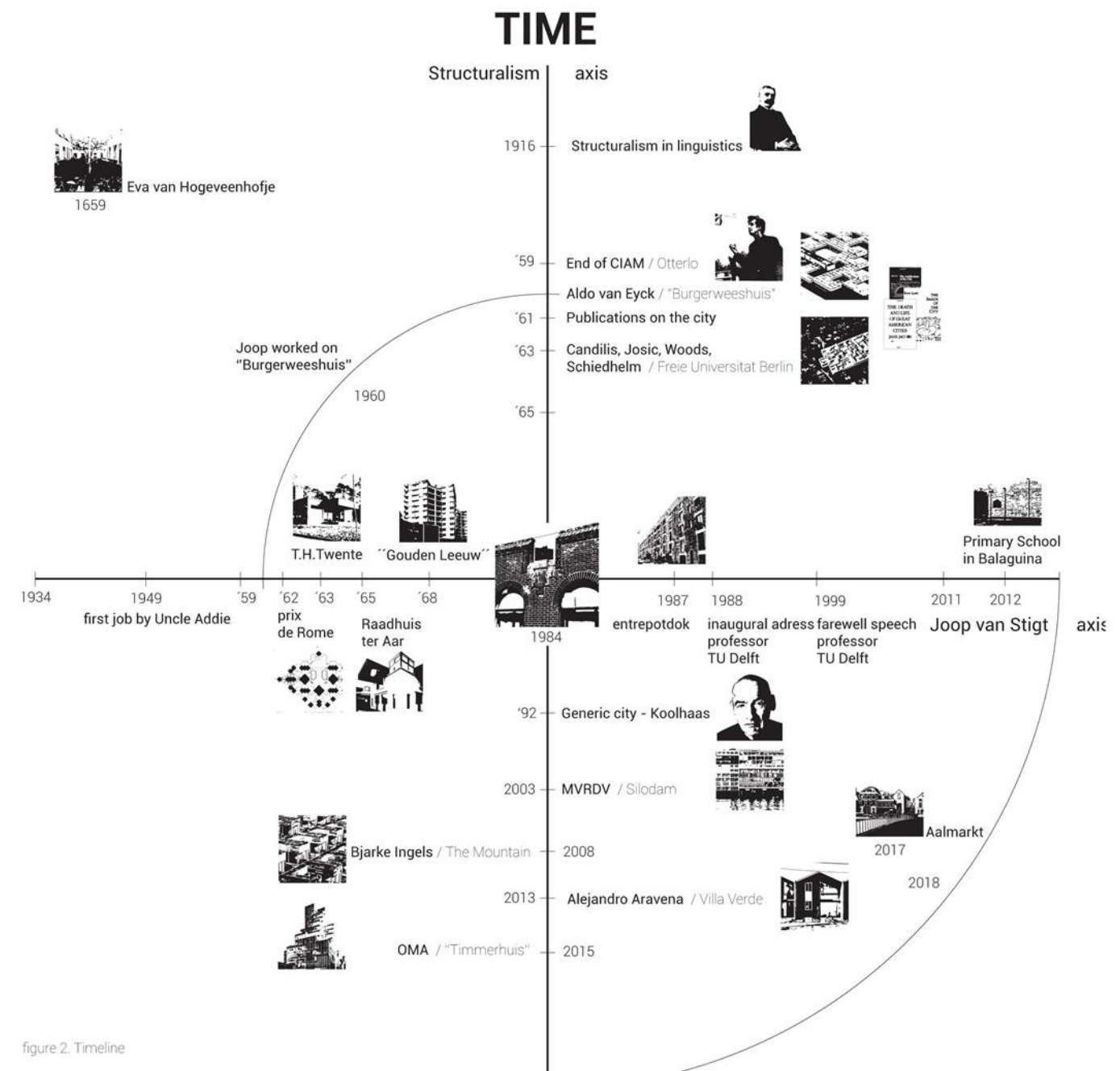


Fig. Photo: Joop van Stigt in Amsterdam; dual timeline of J. van Stigt buildings (x) vs architectural movements (y)

Common themes: Humanities Faculty Leiden University

Units. Flexibility. Building/City. Collectivity.

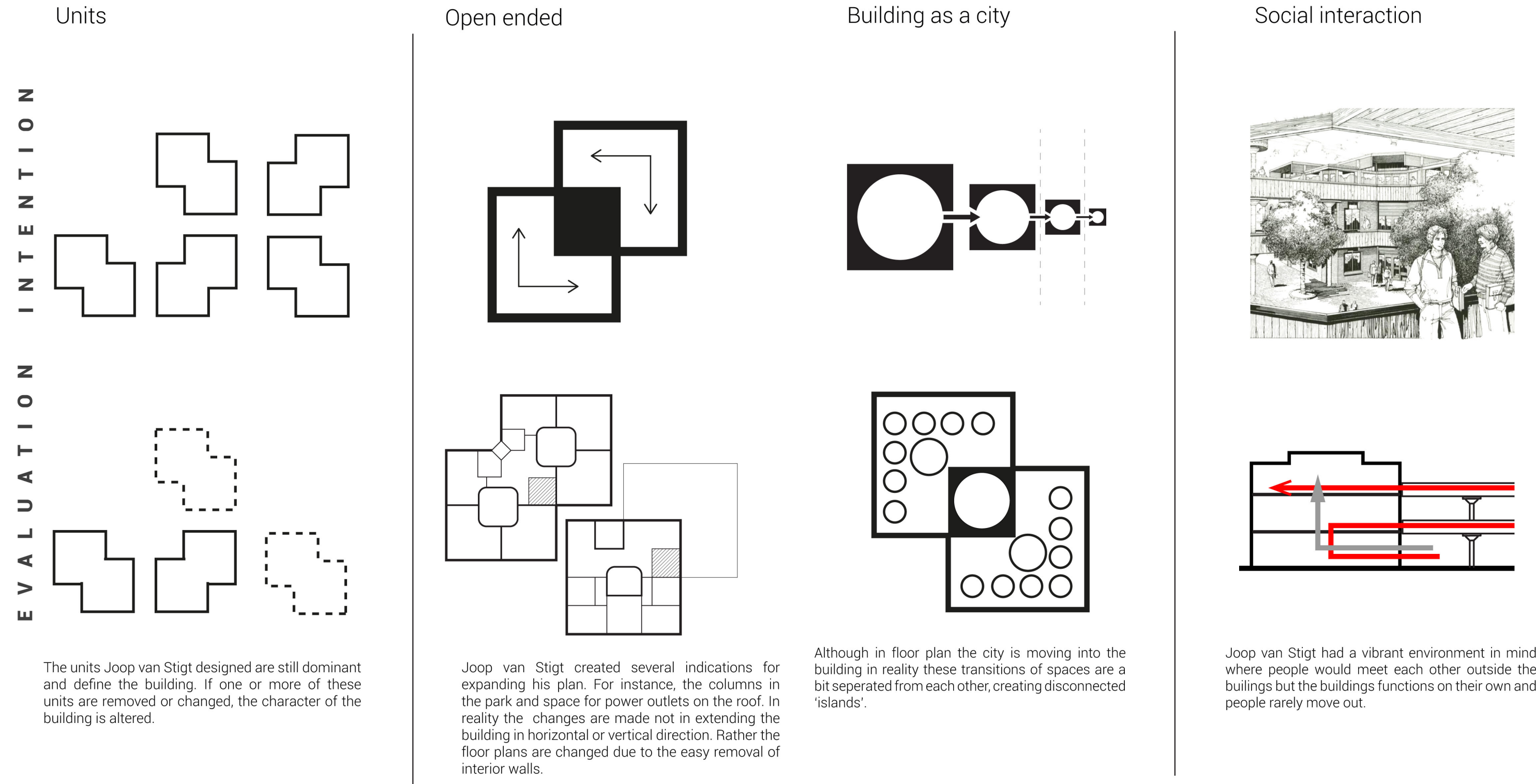


Fig. Group heritage and building analysis

State of situation today?



Fig. Google Maps image



Fig. Public square, courtyard, entrance hall, first floor stair case, interior experience of existing roof

Problem/ research question:

Testing to formate a position

What is the range of possible transformation to a structuralism building in relation to heritage value and future use?

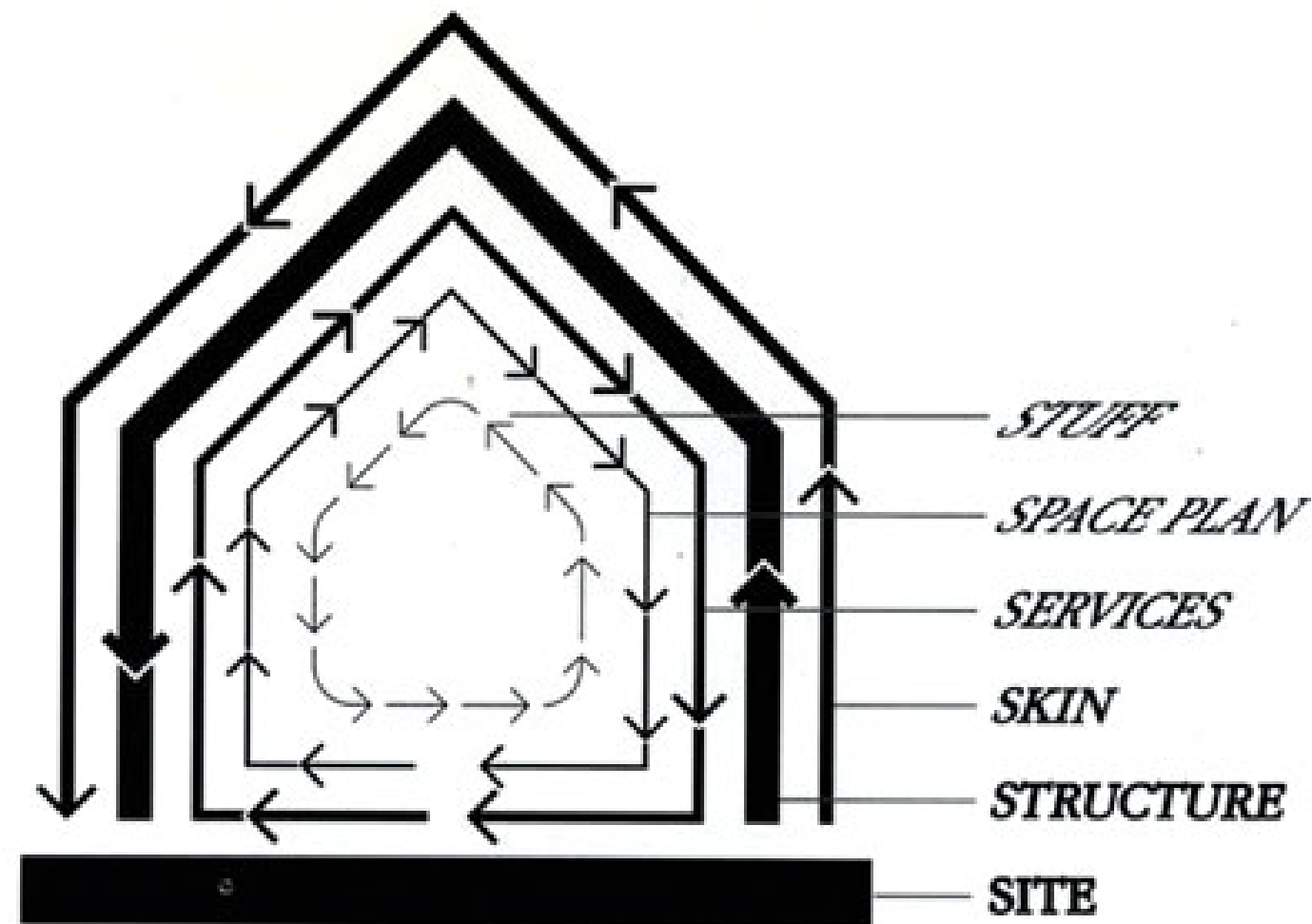
Preserve/
reveal?



Transform/
cover?

What is structure?

What is fixed and what can change?



SHEARING LAYERS OF CHANGE. Because of the different rates of change of its components, a building is always tearing itself apart.

Design question:

How to test the two opposite positions within the limits for possible transformation for future use while preserving the original concept.

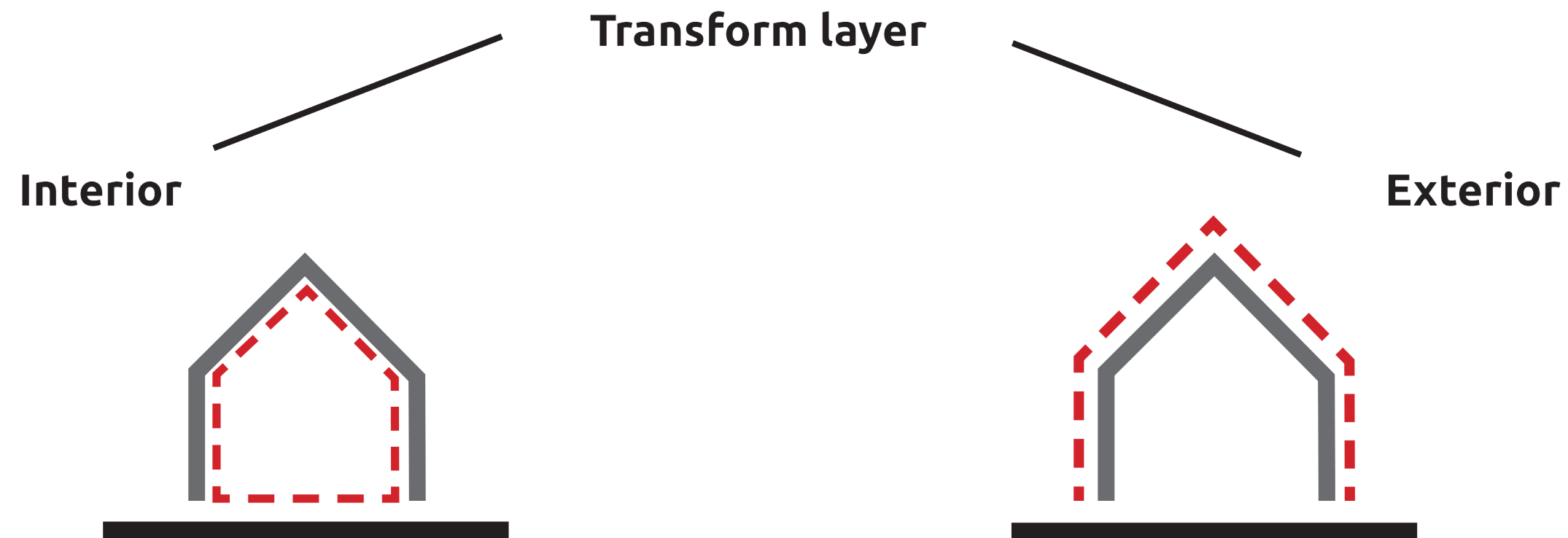


Fig. Dual opposite design approach

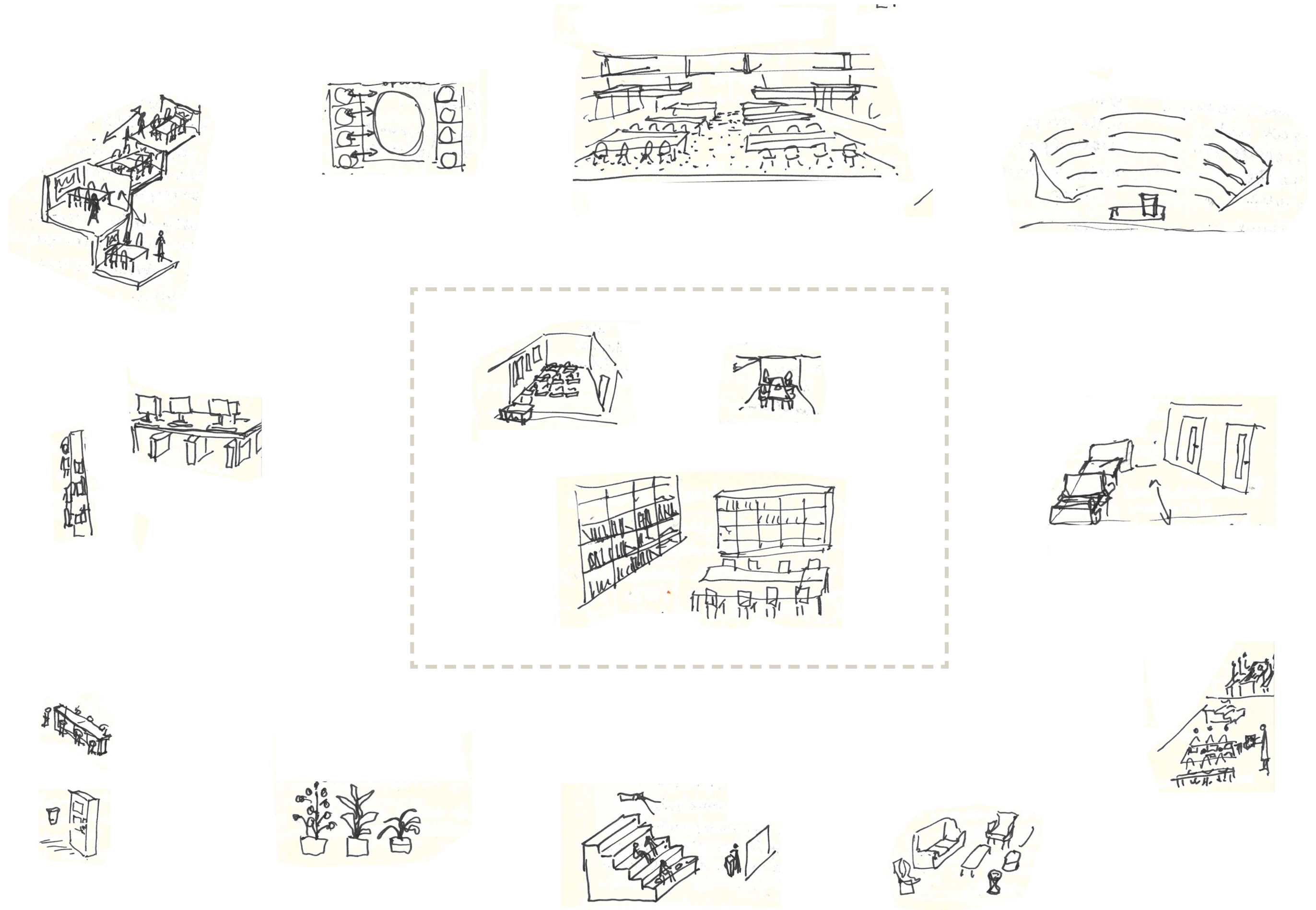


Fig. Diversity of learning spaces today vs forty years ago

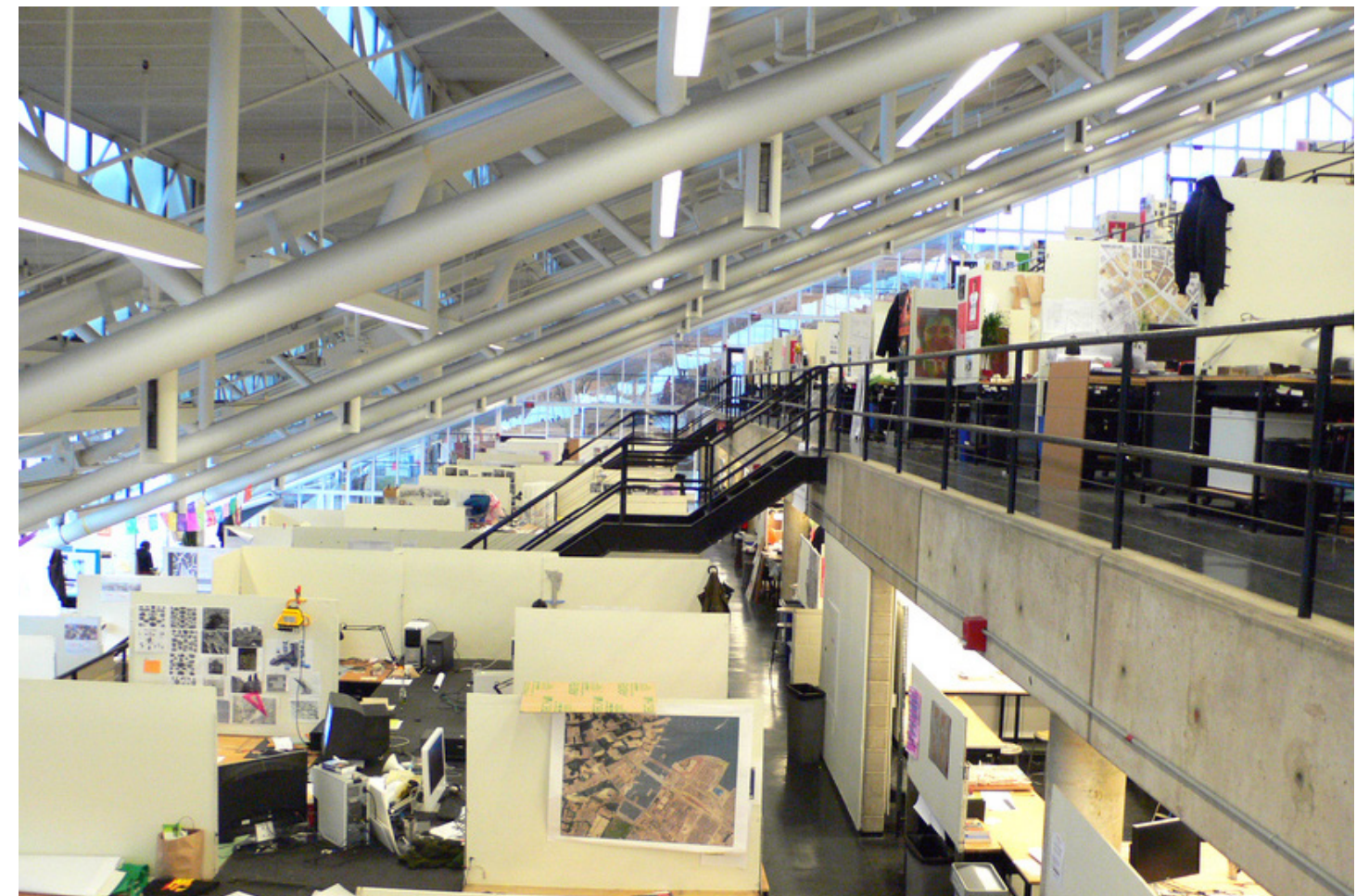


Fig. MIT Media Lab, Erasmus University Library, Rotterdam, Industrial Design Faculty TU Delft, Gund Hall Harvard

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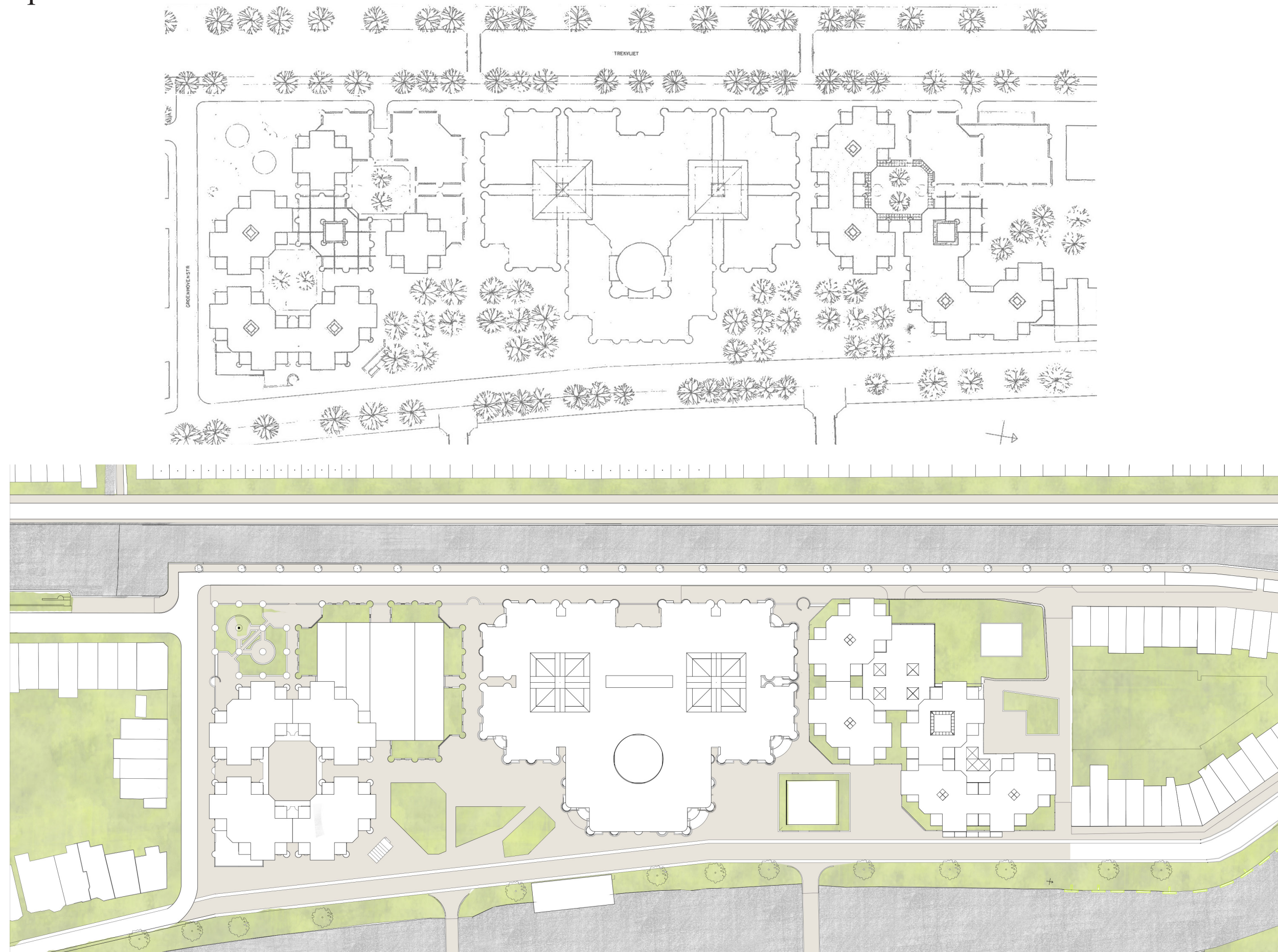
D. Choosing a position

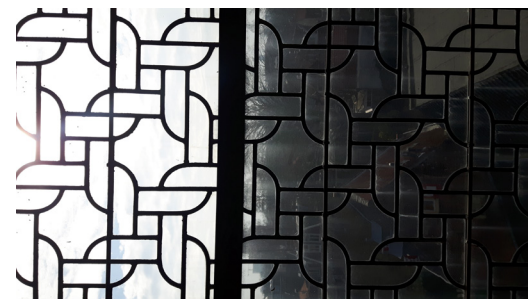
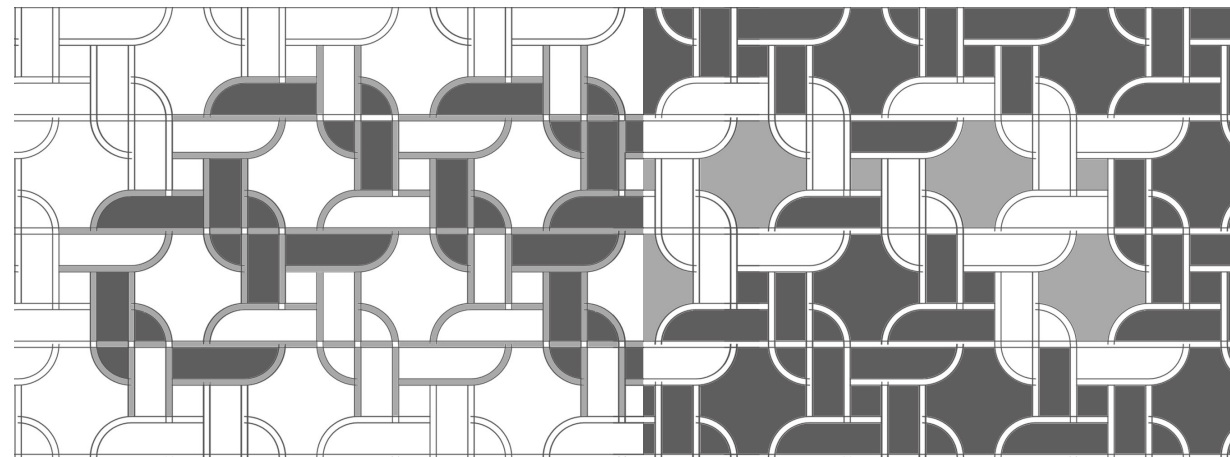
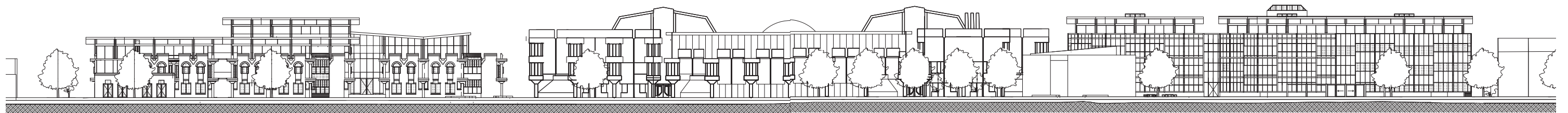
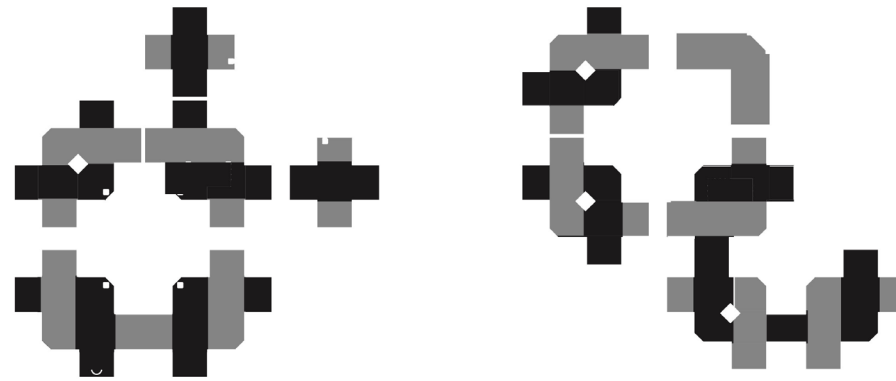
E. Technical details connecting old and new

F. Conclusion: position

Site plan

Design proposal South and North Cluster

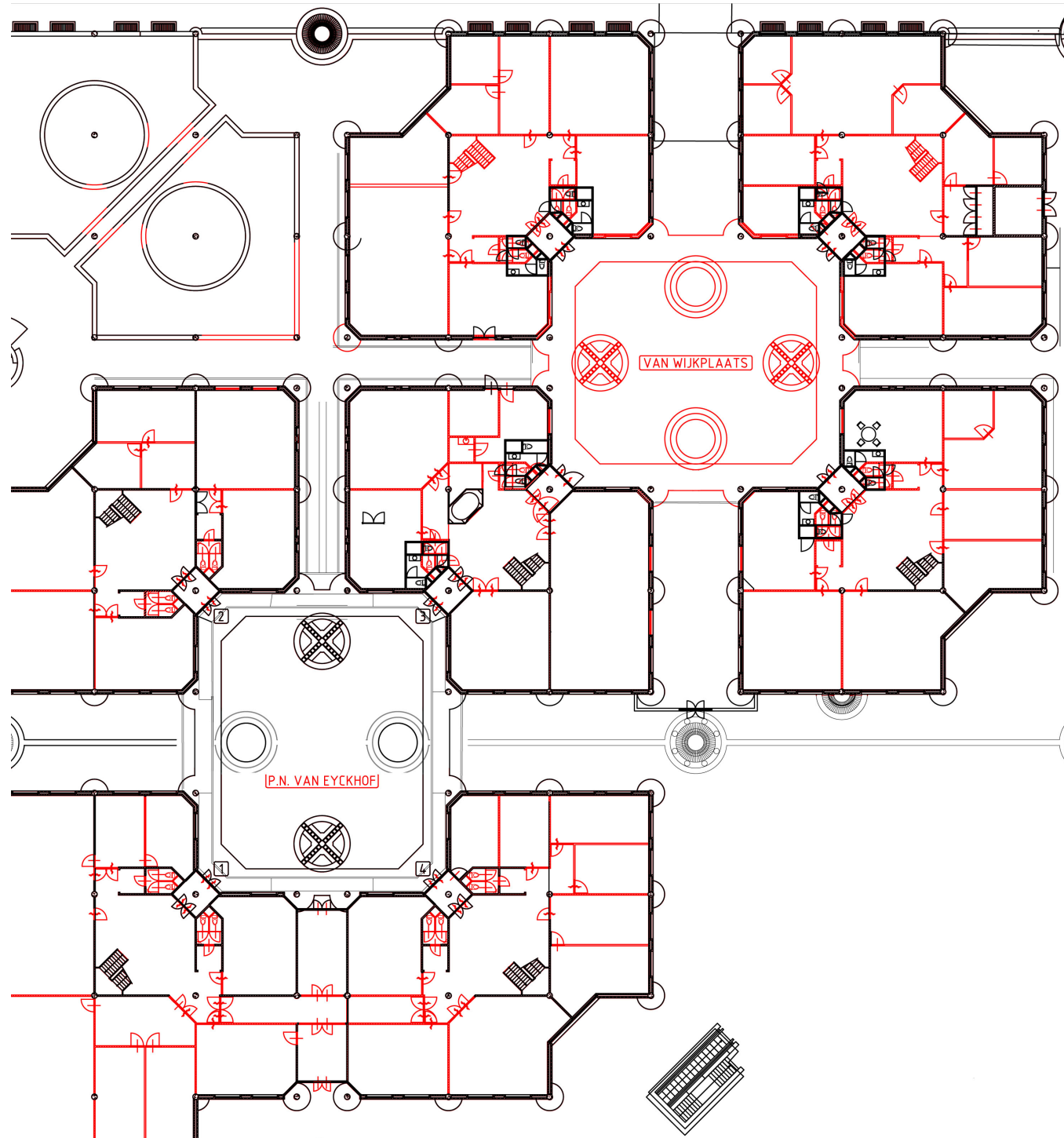




“Dialectics is not a method for generating predetermined outcomes but it is a method of study of social process: interrelations, development, transformation”
(Herman Hertzberger).

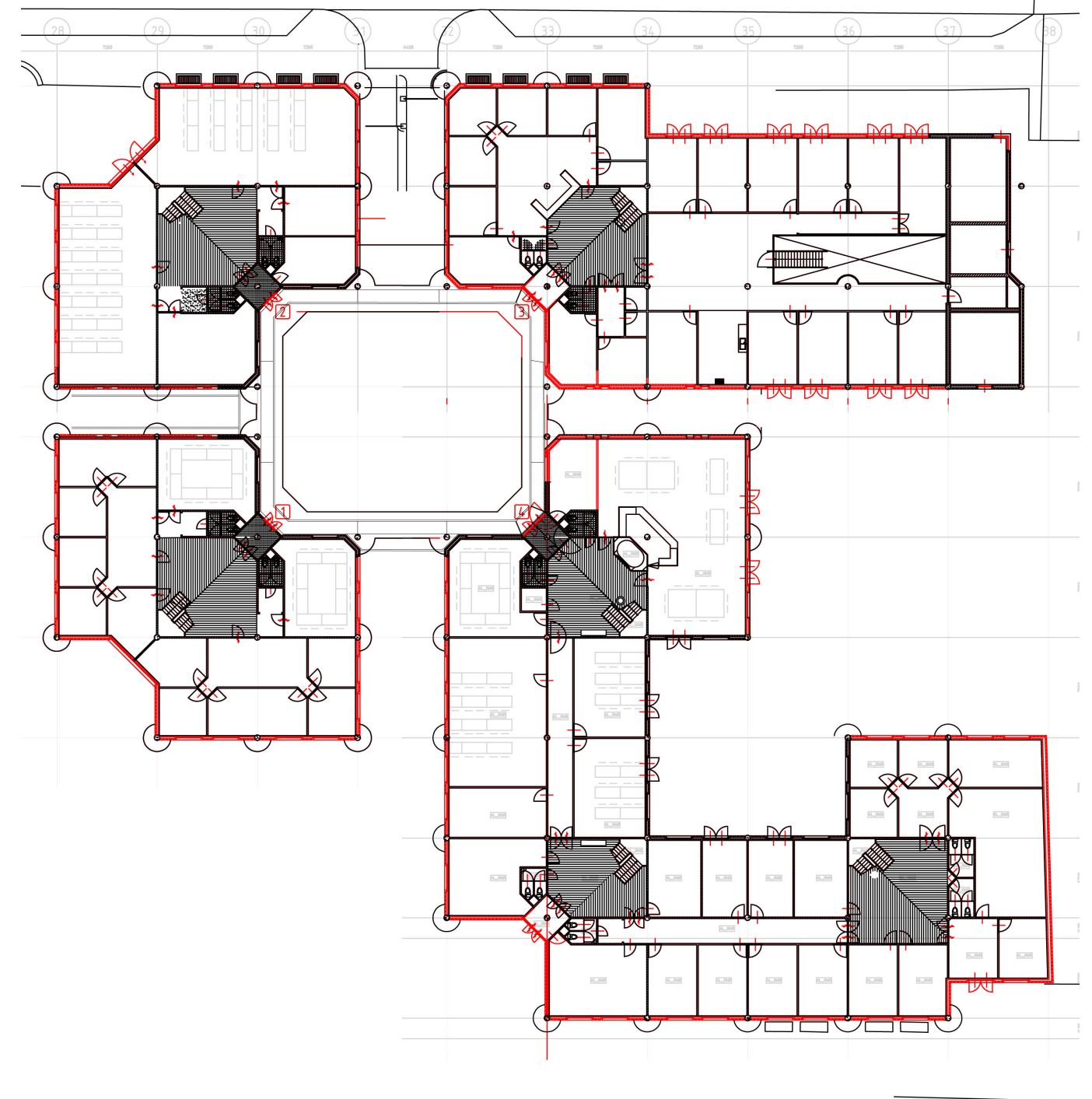
Demolition

South cluster ground floor plan



- Remove interior finishes
- Cover the structure with a new surface (thermal bridges)

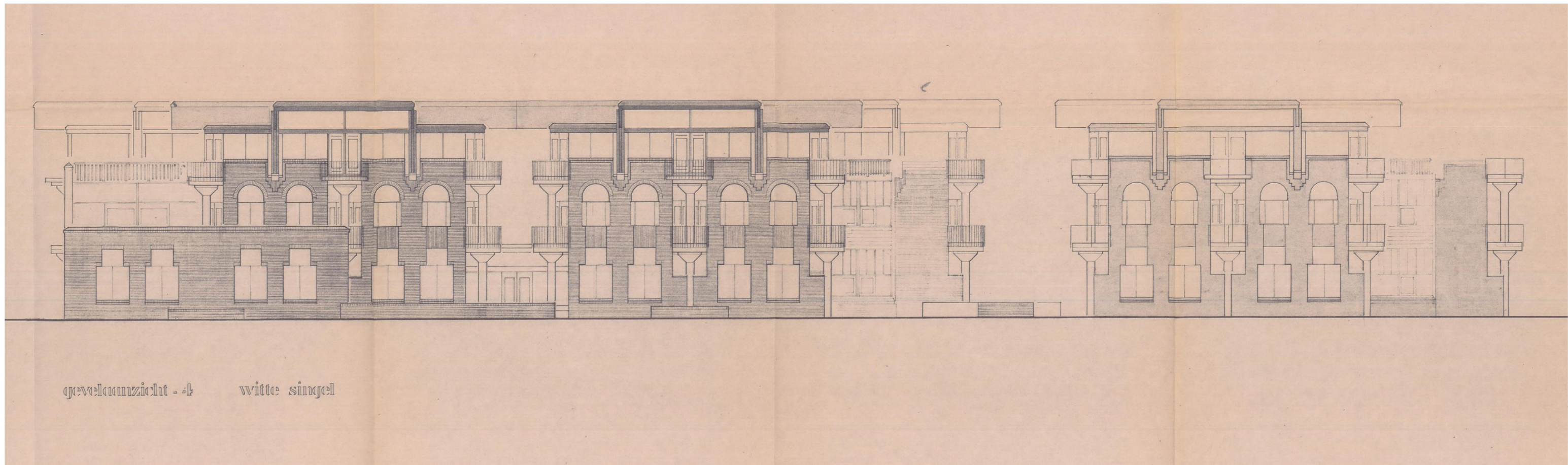
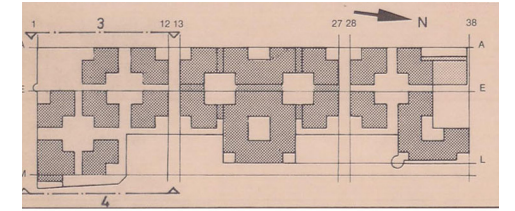
North cluster ground floor plan

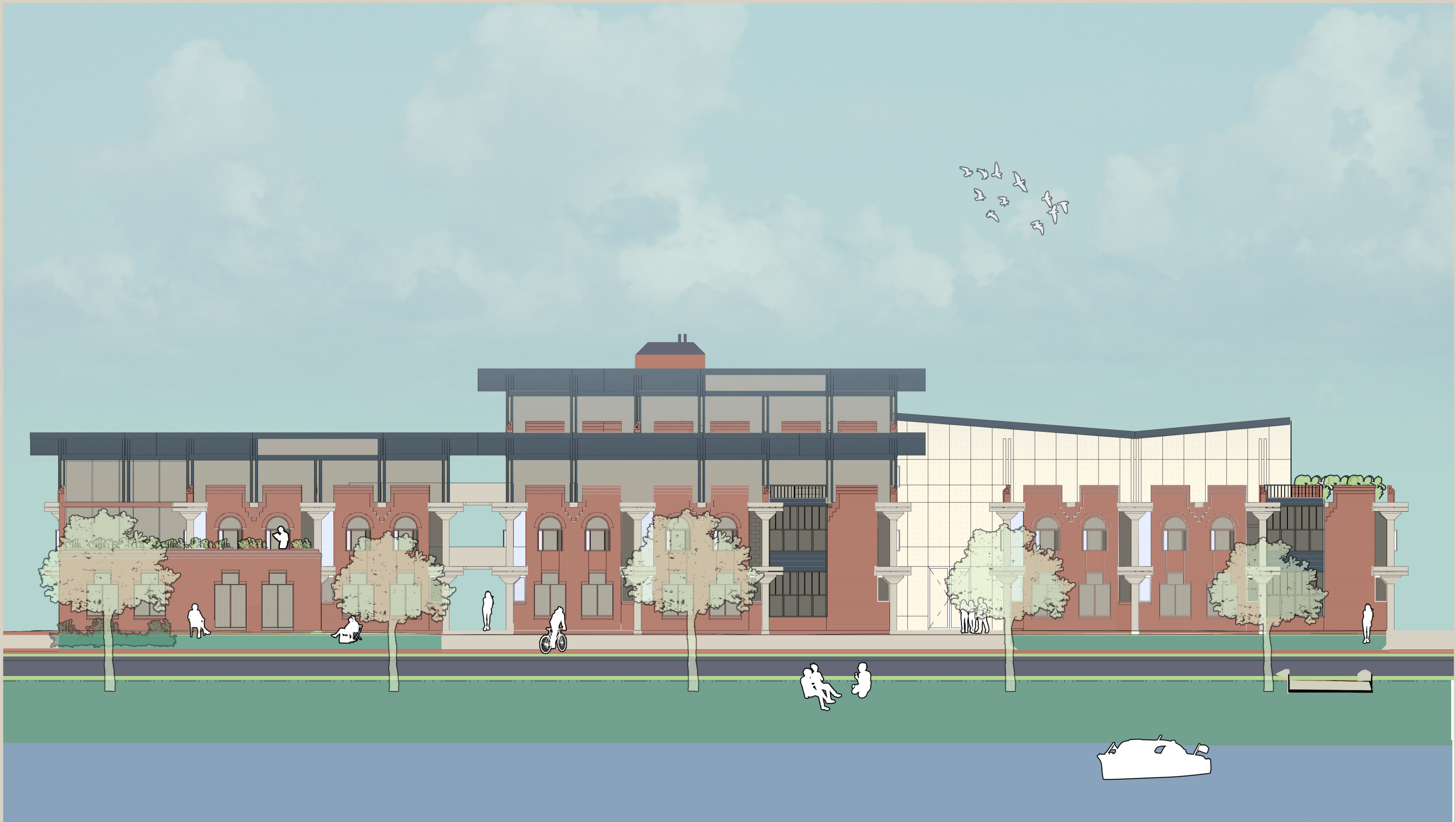


- Remove existing facade
- Cover the structure with new skin (thermal bridges)

East elevation old

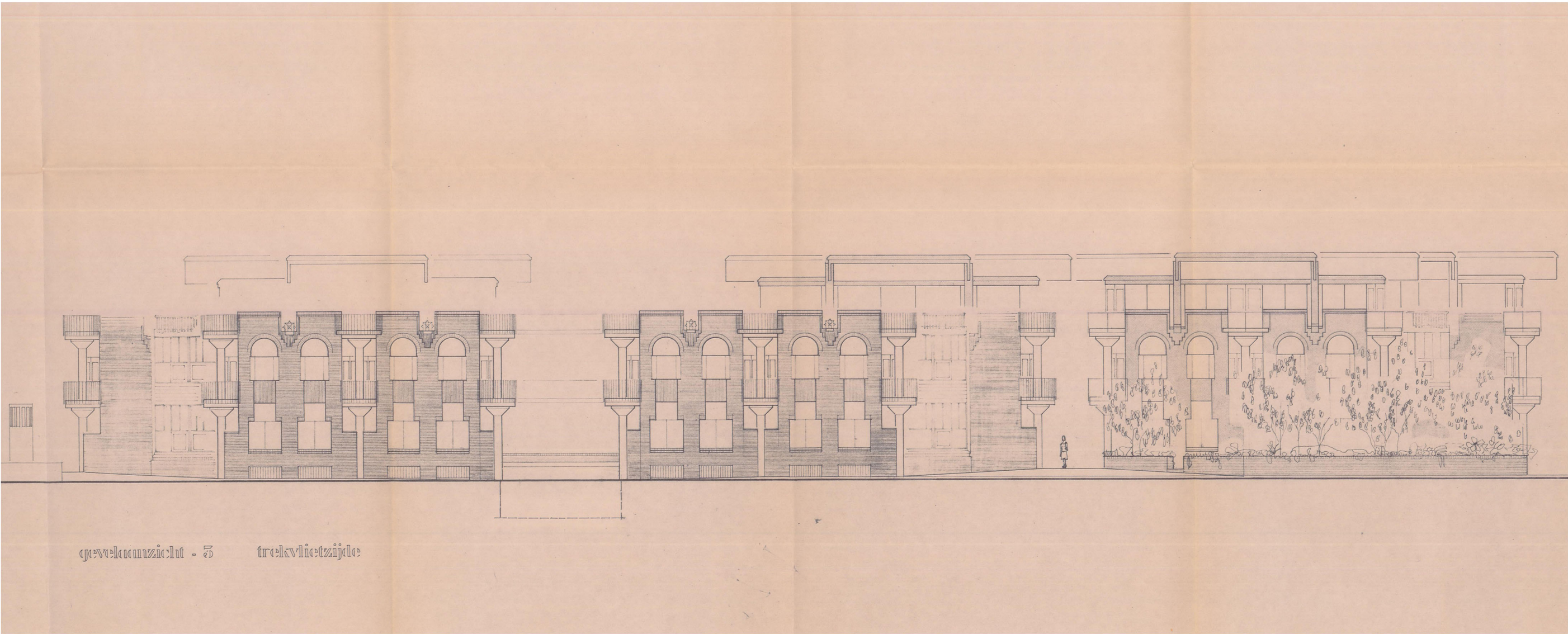
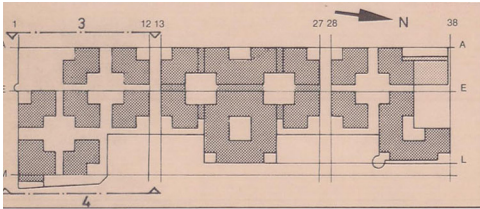
South cluster, Wittesingel





West elevation old

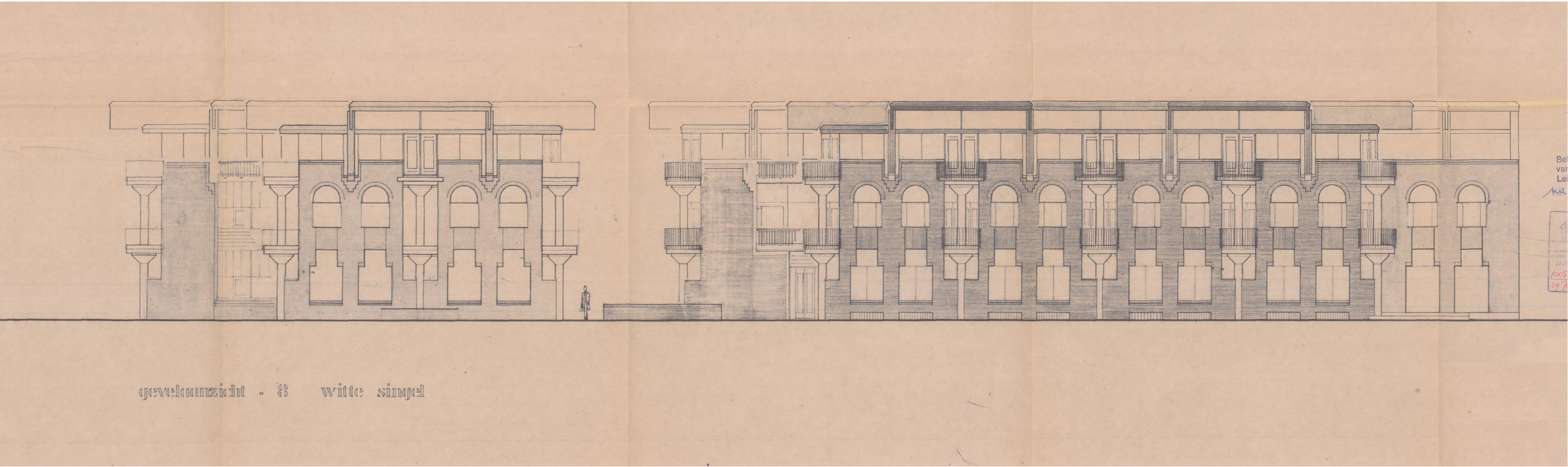
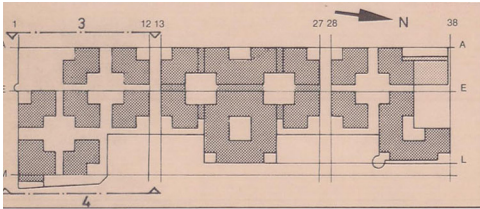
South cluster, Trekvliet





East elevation old

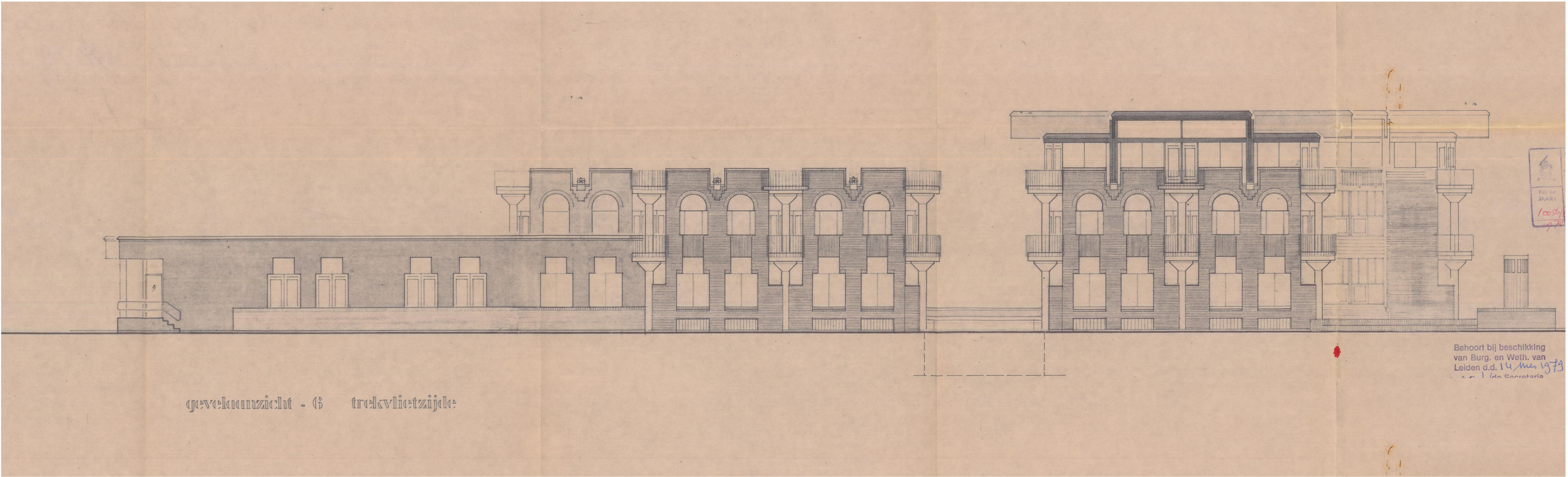
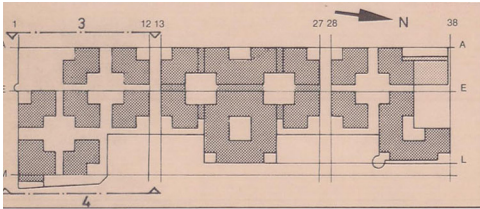
North cluster, Wittesingel





West elevation old

North cluster, Trekvliet





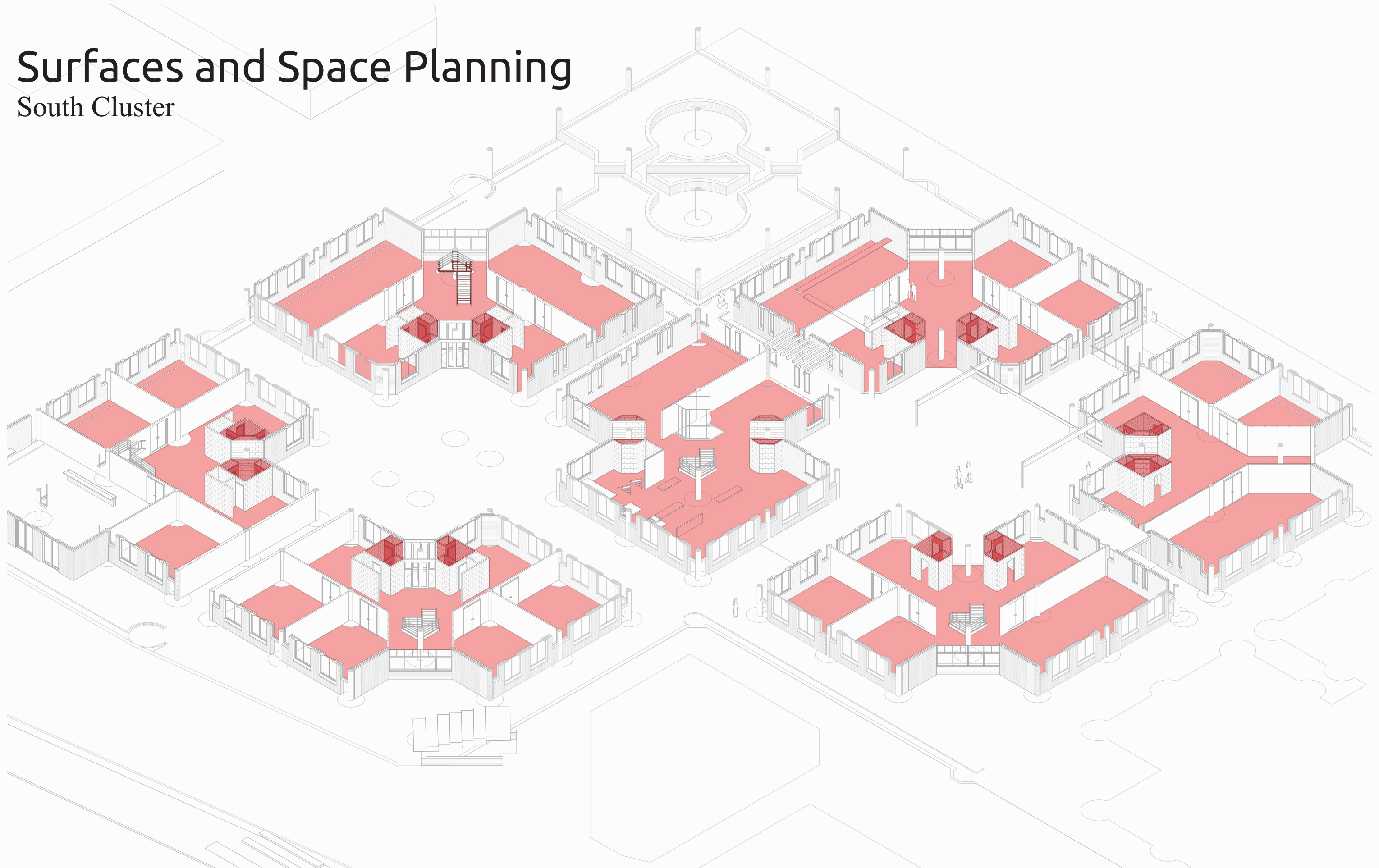
Program

South Cluster



Surfaces and Space Planning

South Cluster



Collective Platforms

South Cluster



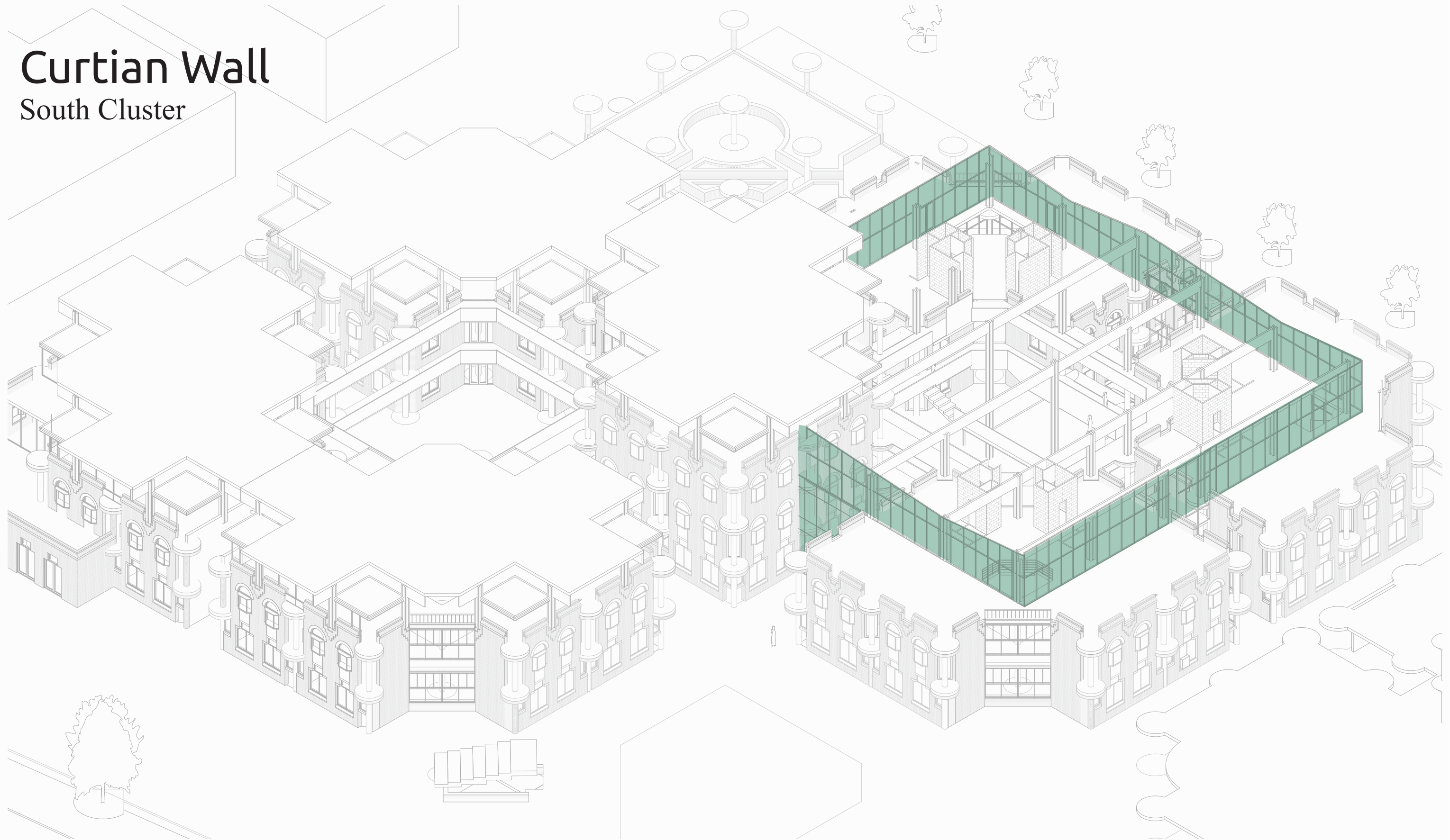
Timber Structure

South Cluster



Curtian Wall

South Cluster



Roof

South Cluster



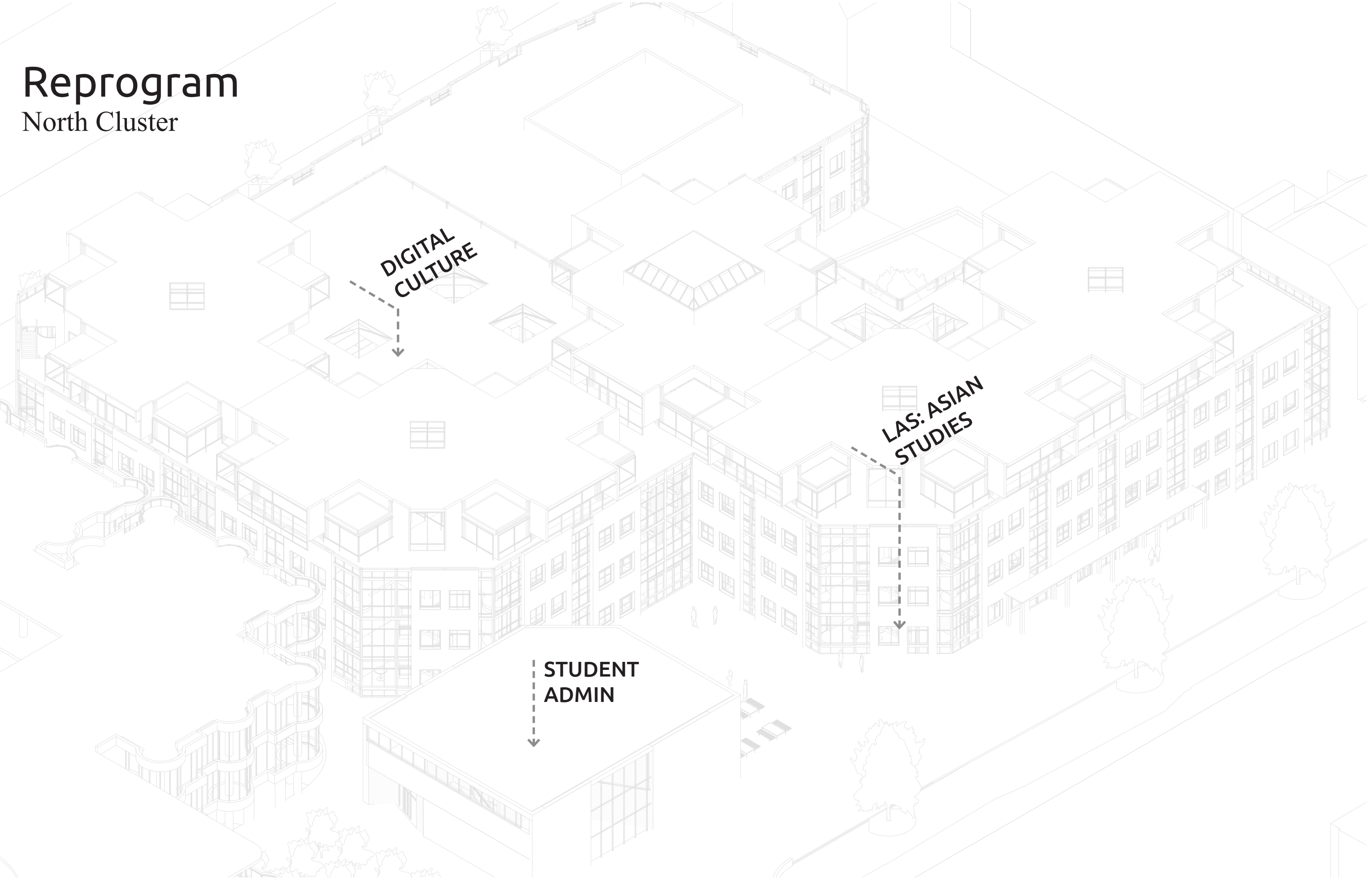
Program

North Cluster



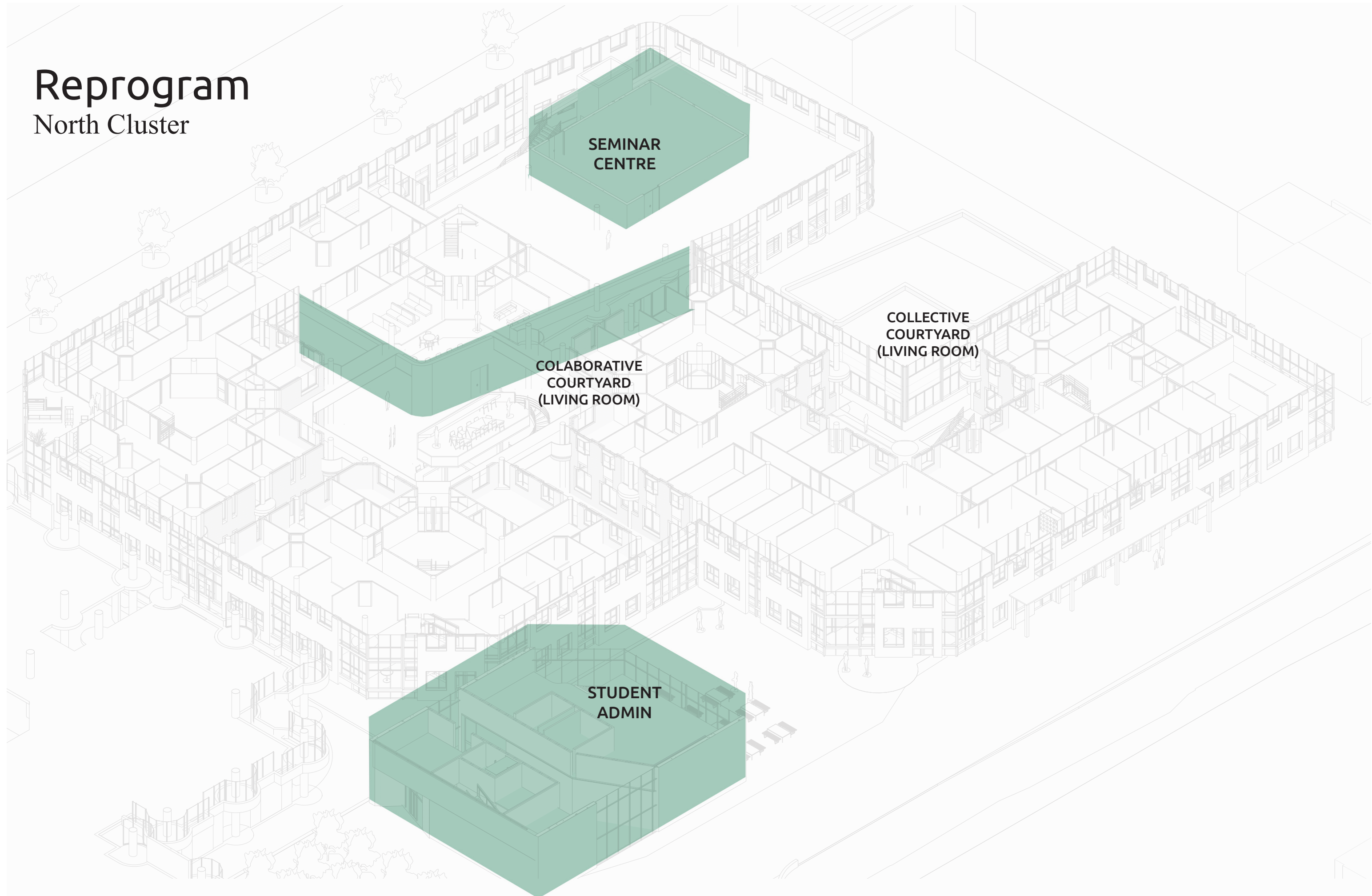
Reprogram

North Cluster



Reprogram

North Cluster



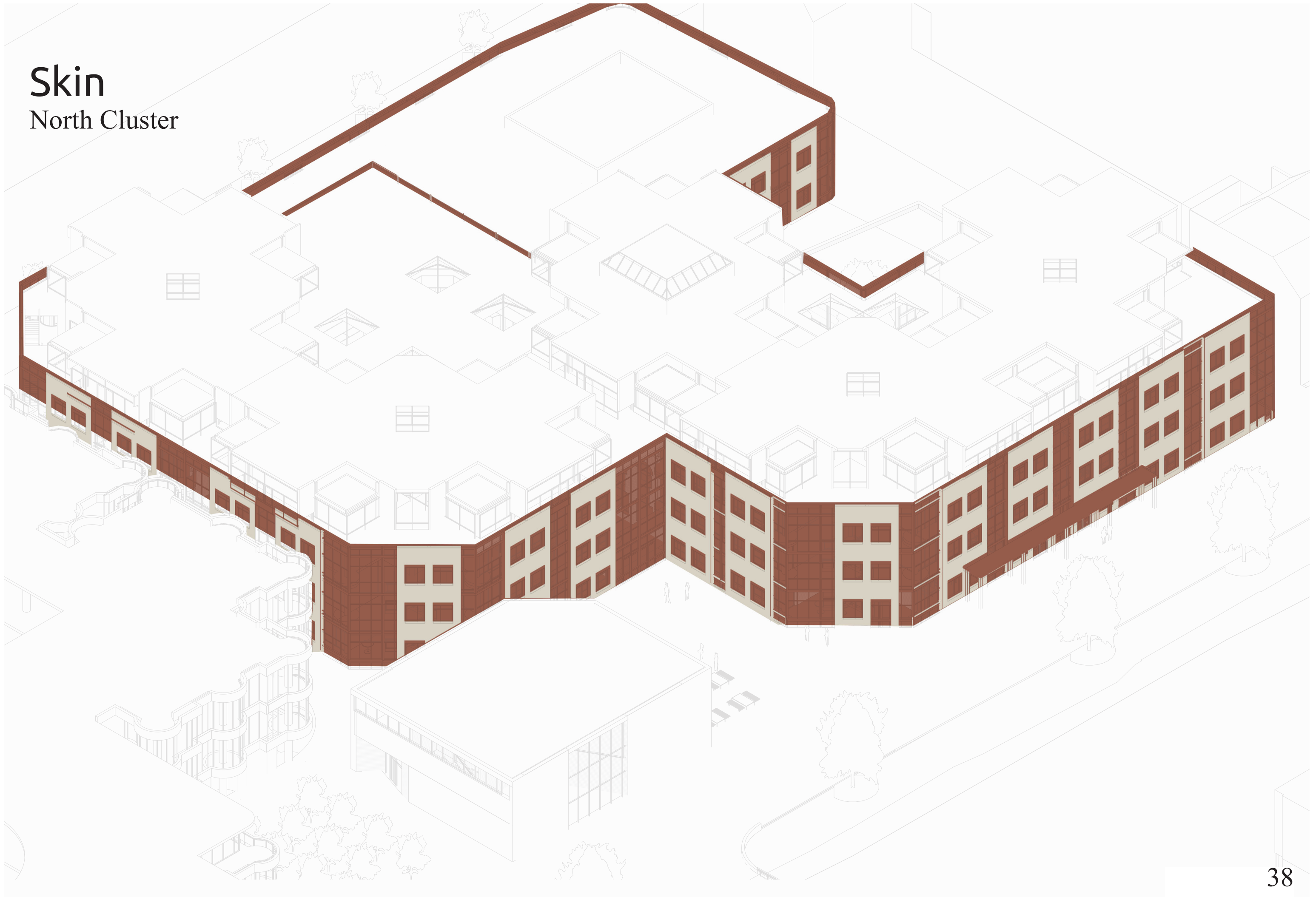
Platforms

North Cluster



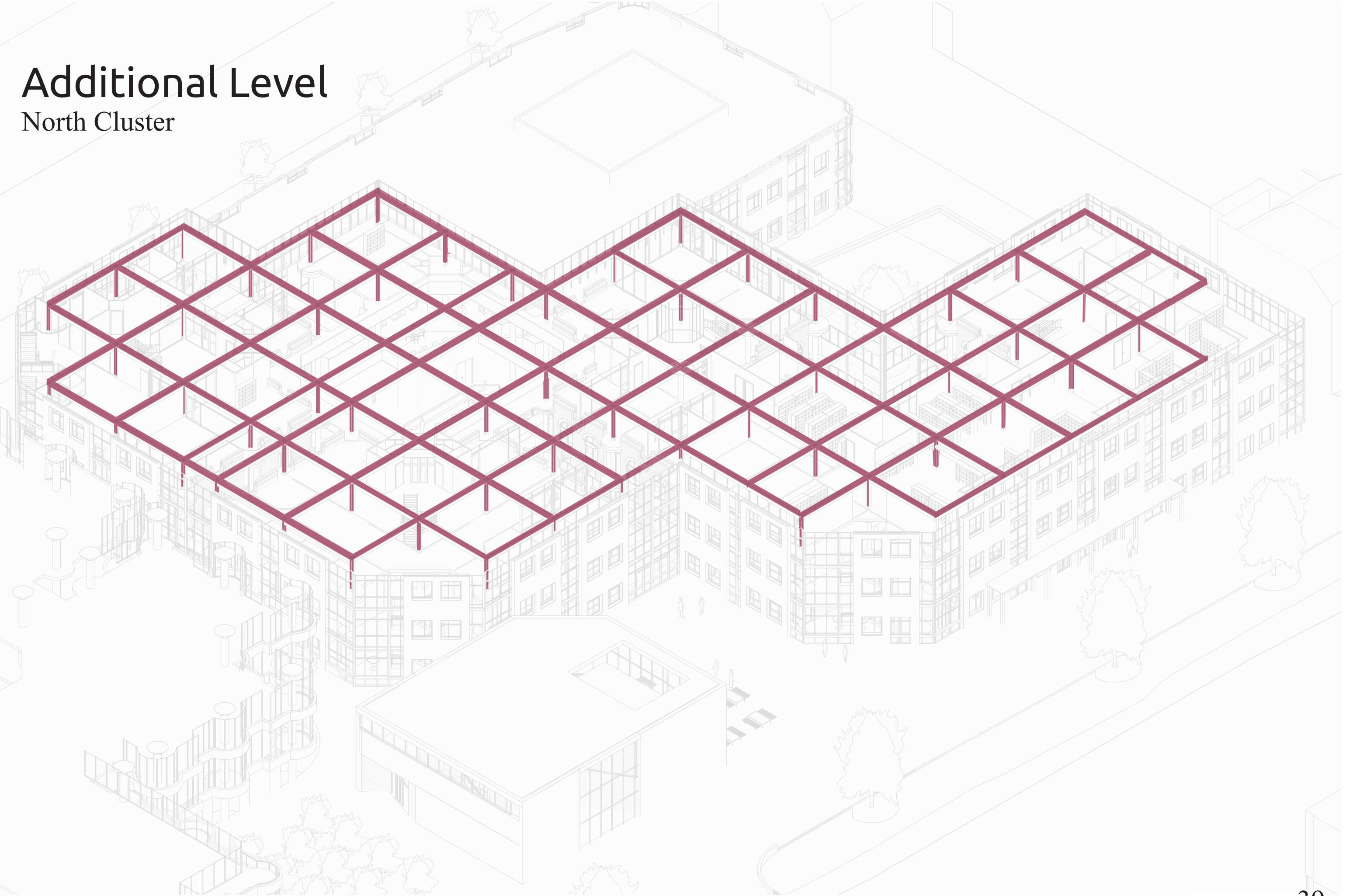
Skin

North Cluster



Additional Level

North Cluster



Reuse

North Cluster



Content

Testing to formate a position

A. Theoretical background

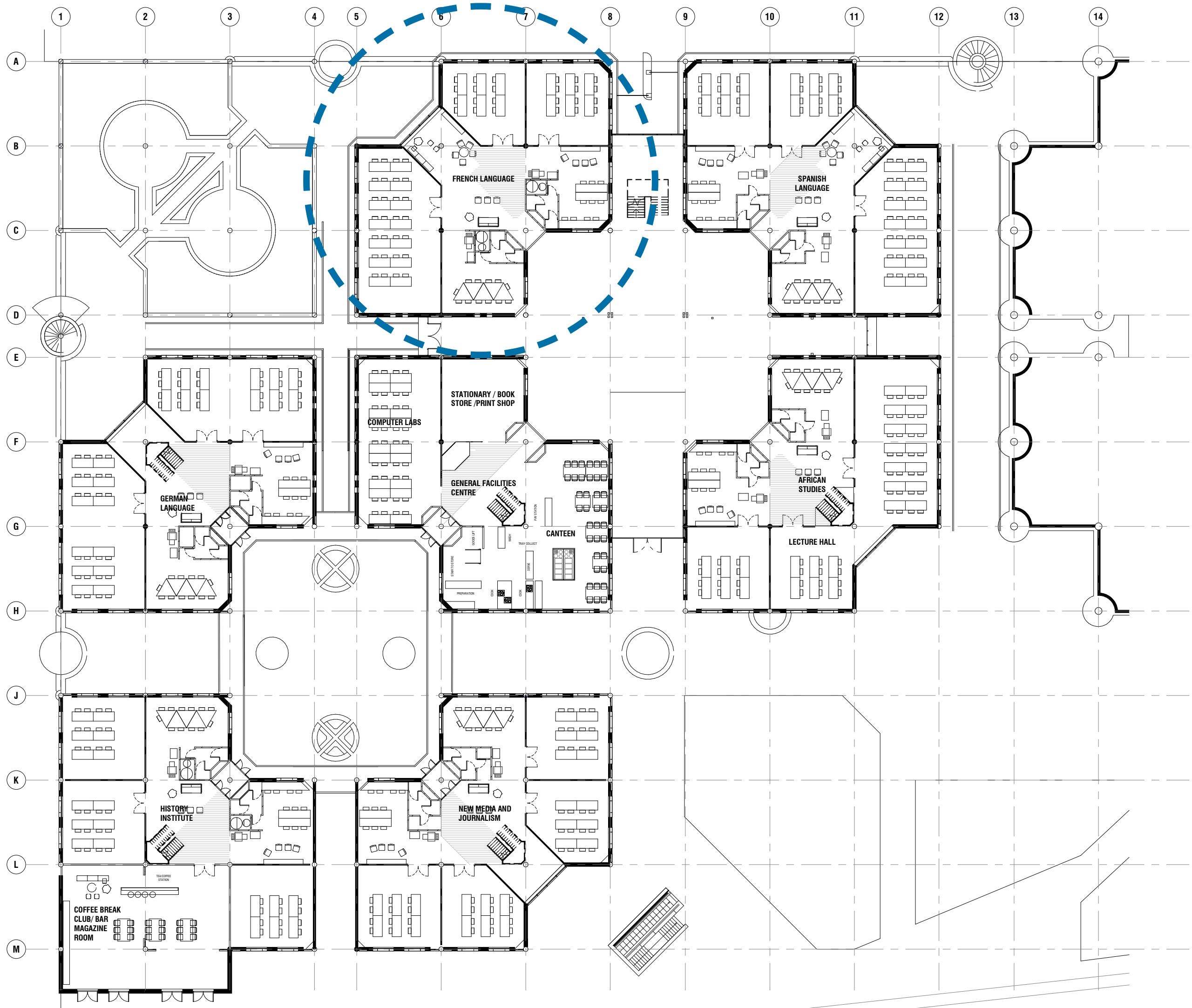
B. Urban context in relation to site

C. Building clusters in relation to units

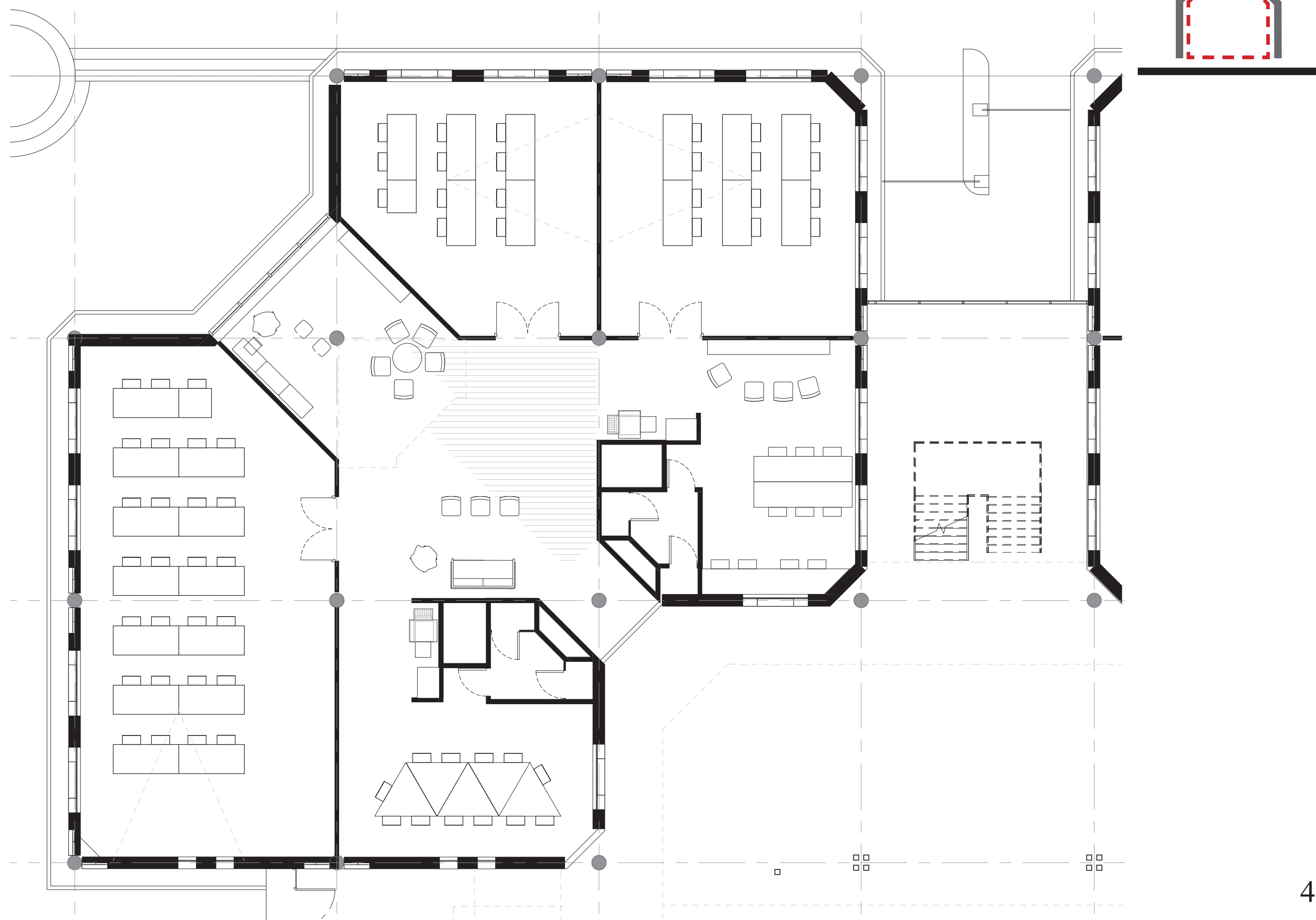
D. Choosing a position

E. Technical details connecting old and new

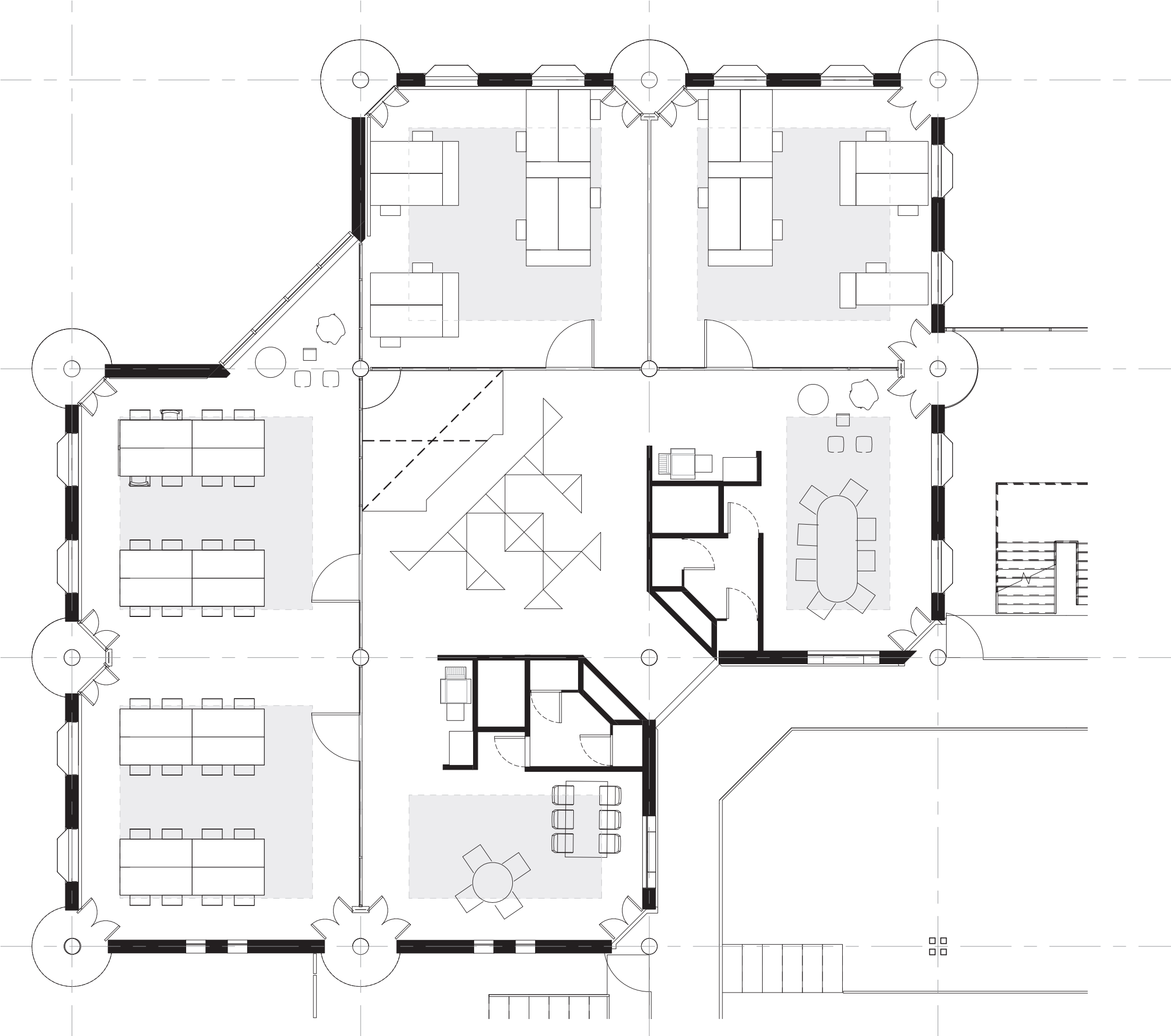
F. Conclusion: position



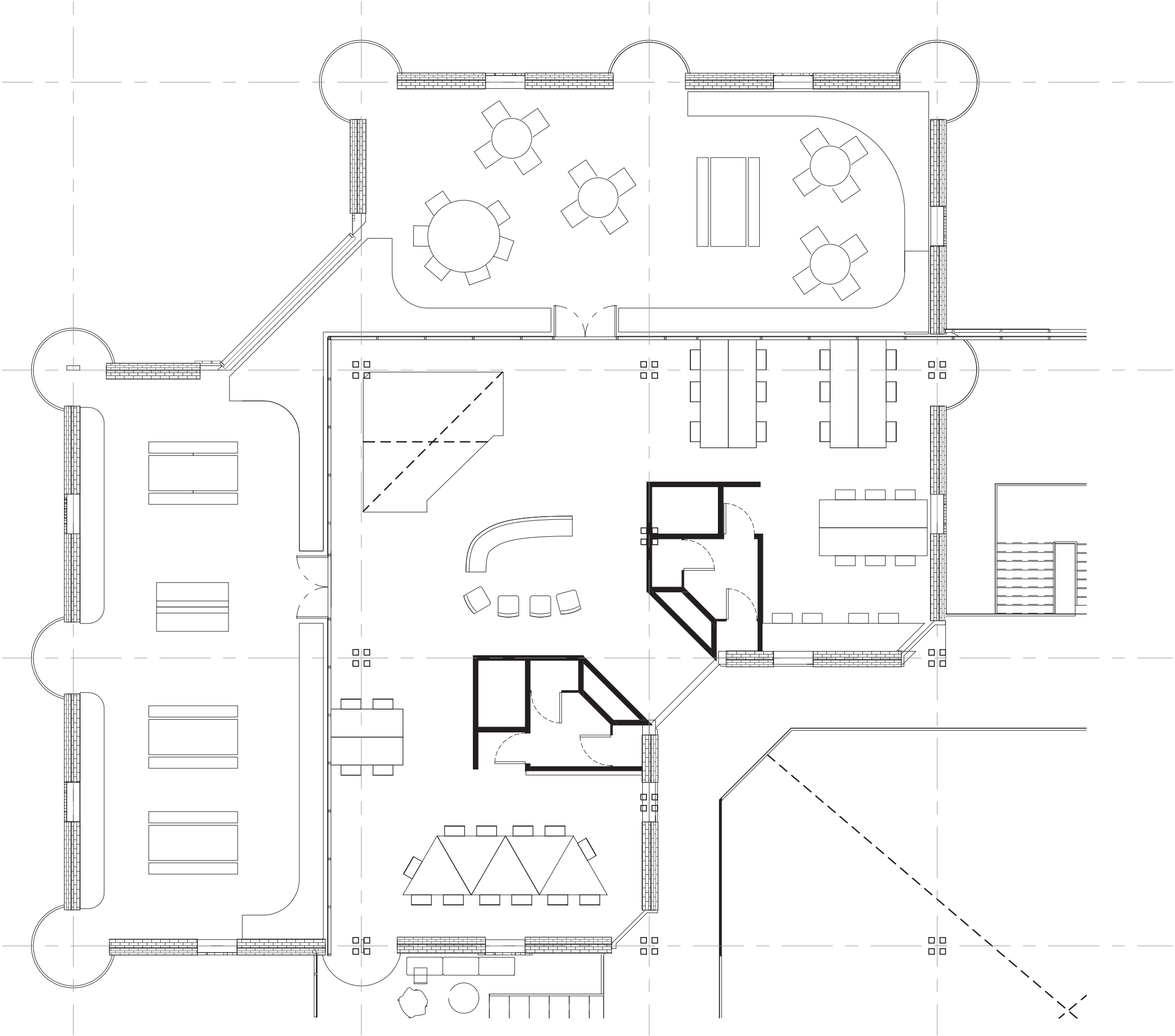
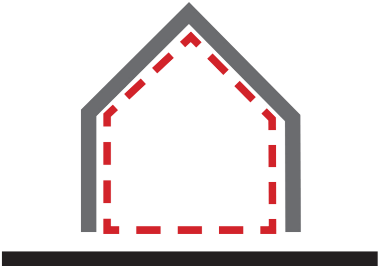
South cluster
Ground floor unit plan



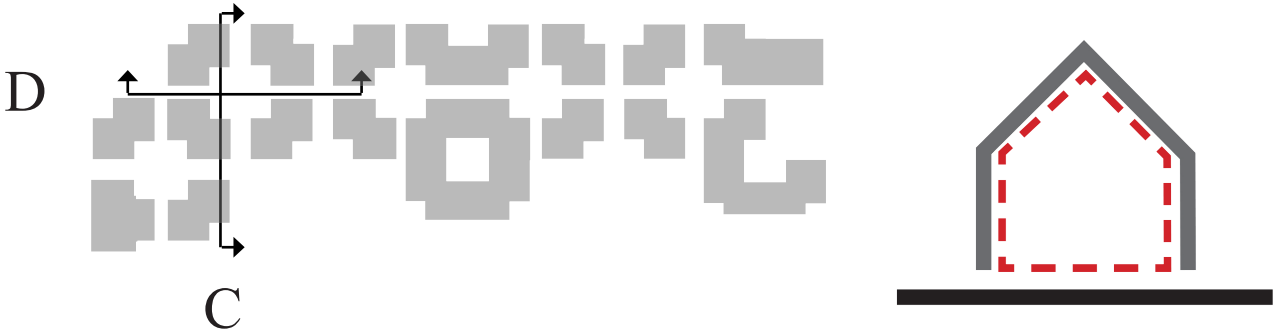
South cluster
First floor unit plan



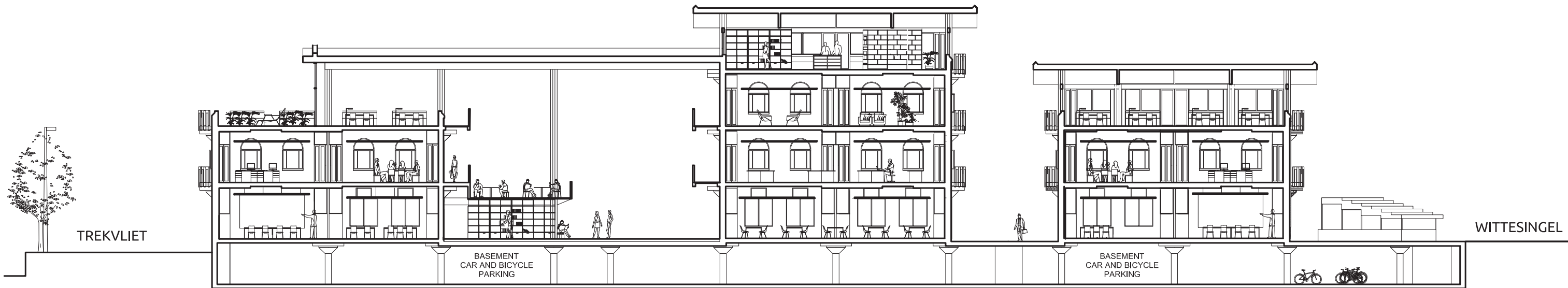
South cluster
Second floor unit plan



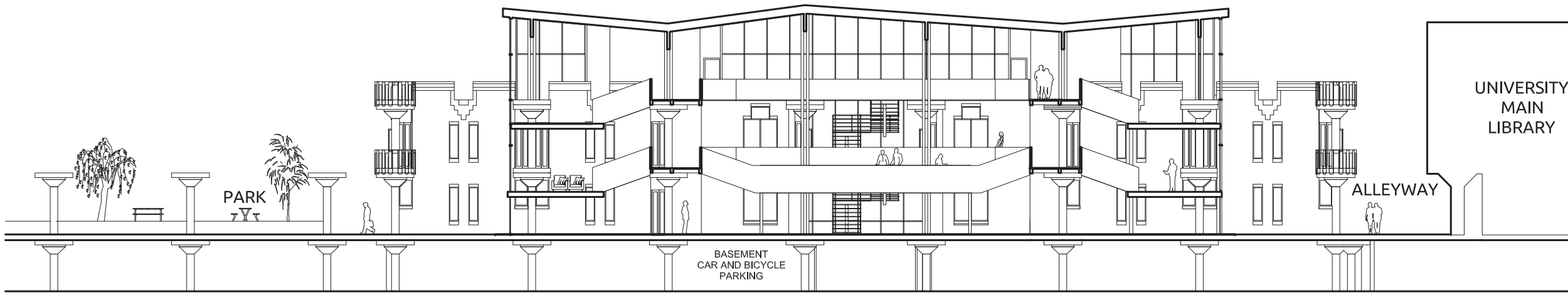
South cluster



Section C - C, Scale 1:250



Section D - D, Scale 1:250



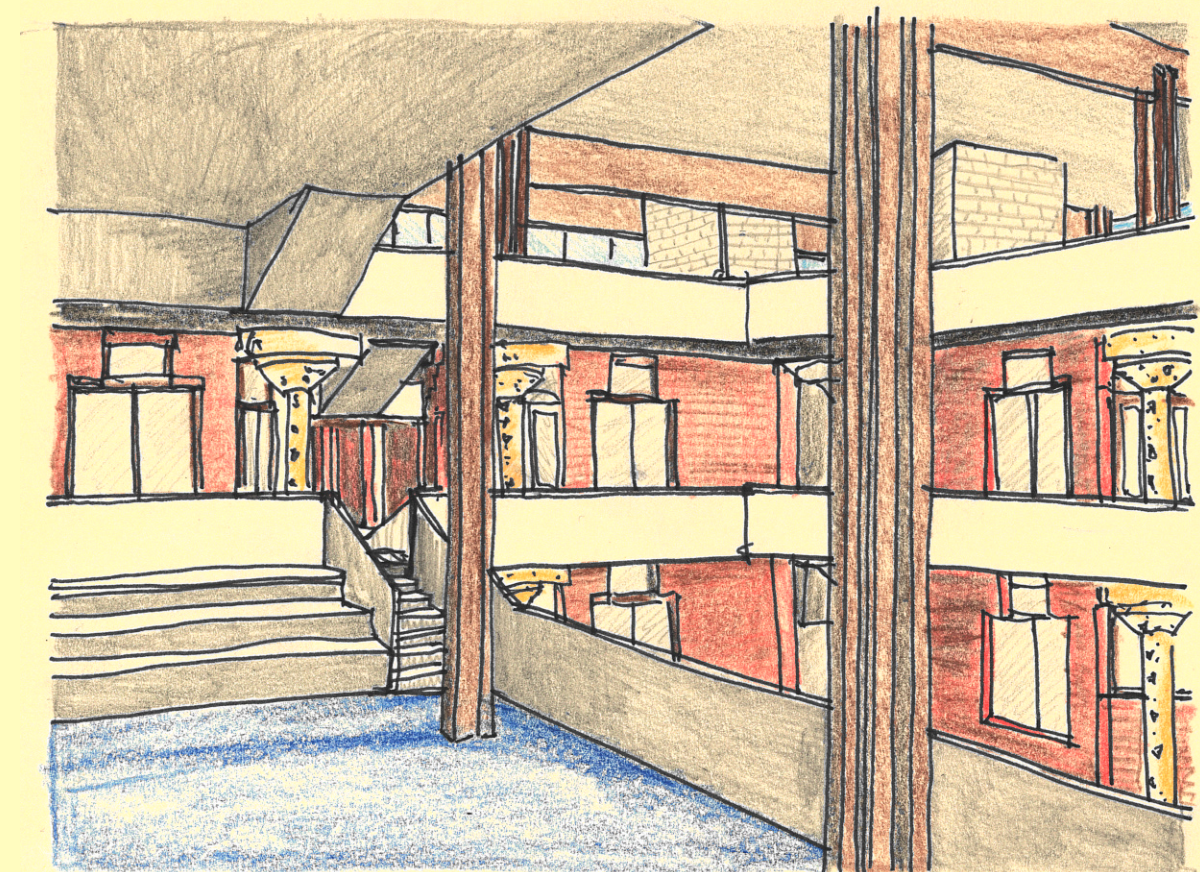
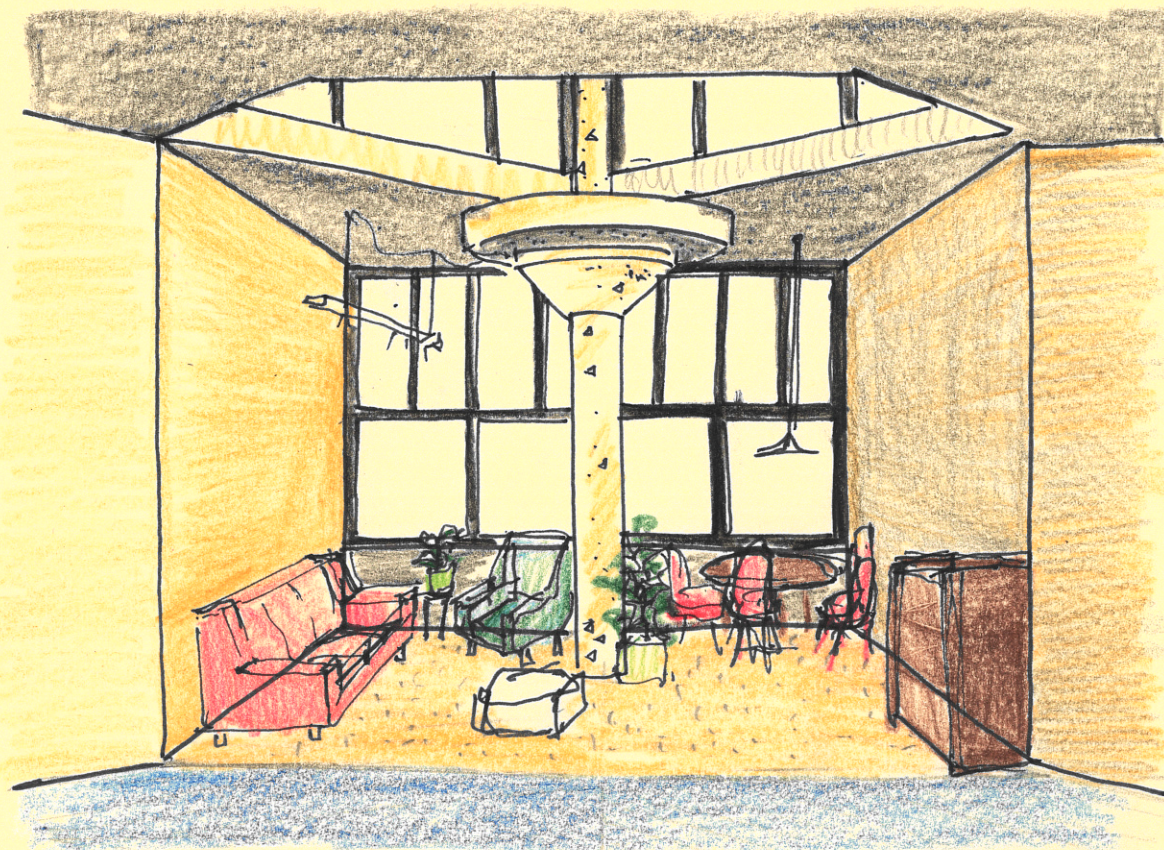


Fig. Sequence of perspective views South Cluster: Alleyway along park, entrance under platform, living room between classrooms, collective platform introduced into atrium

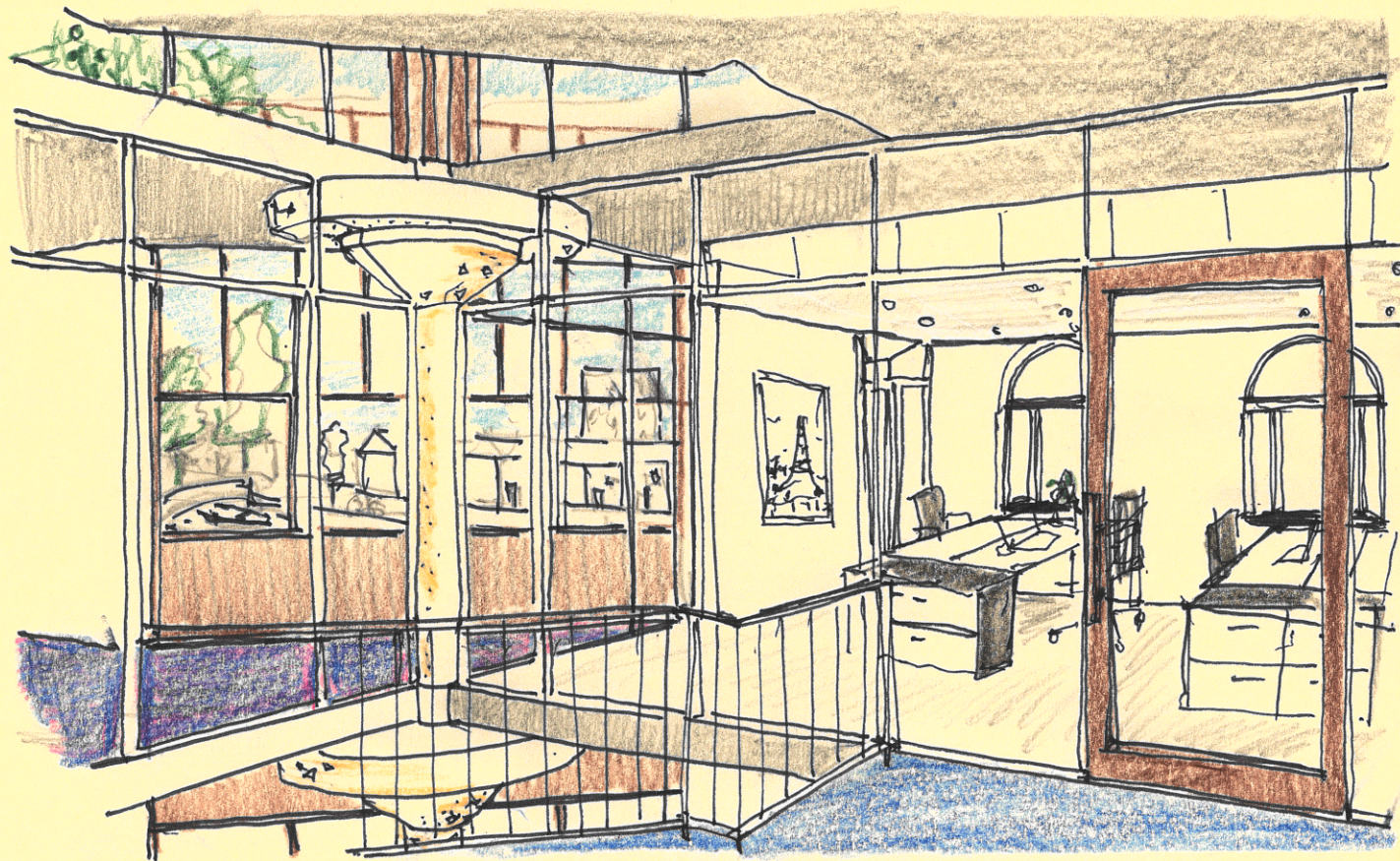
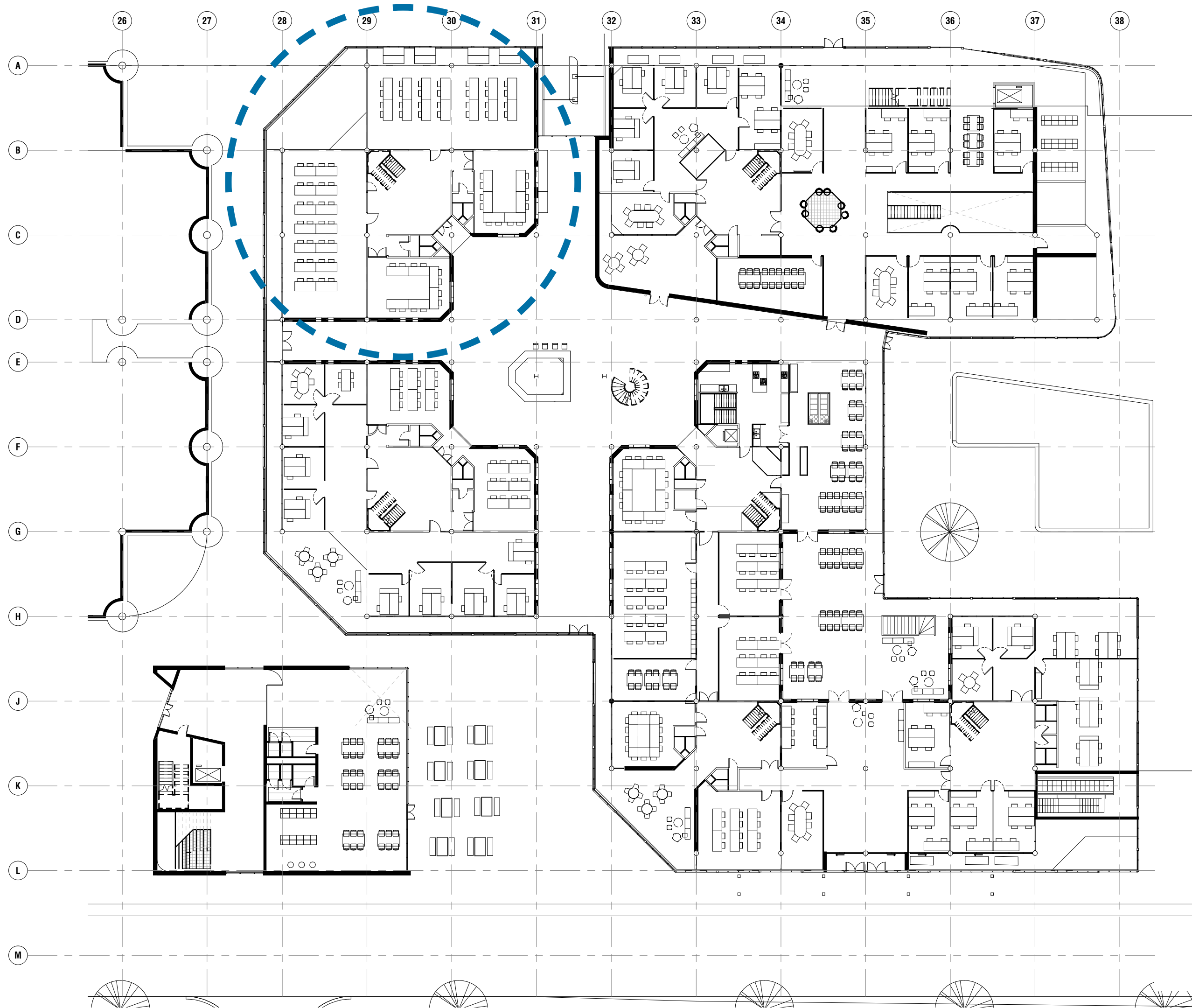
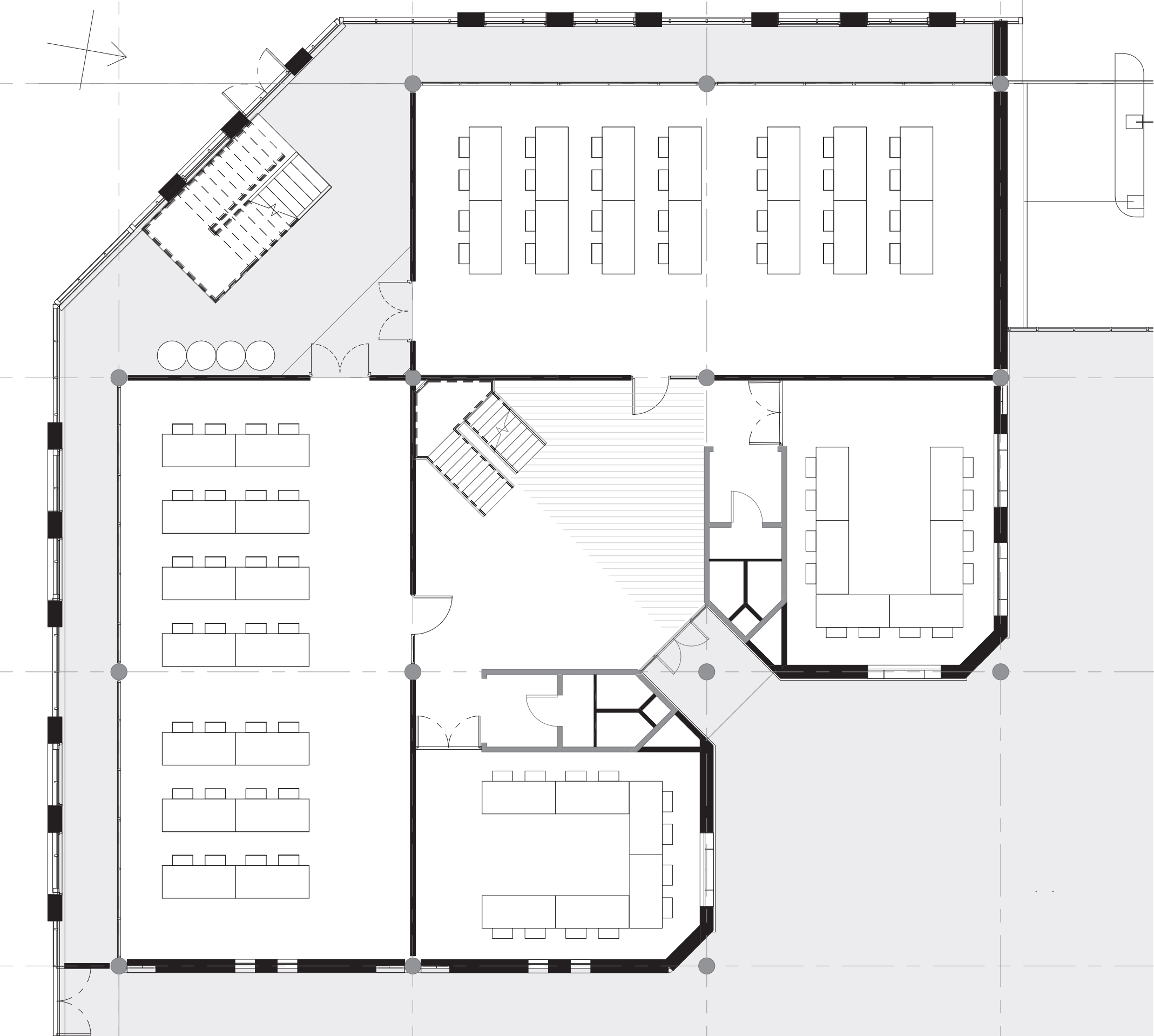


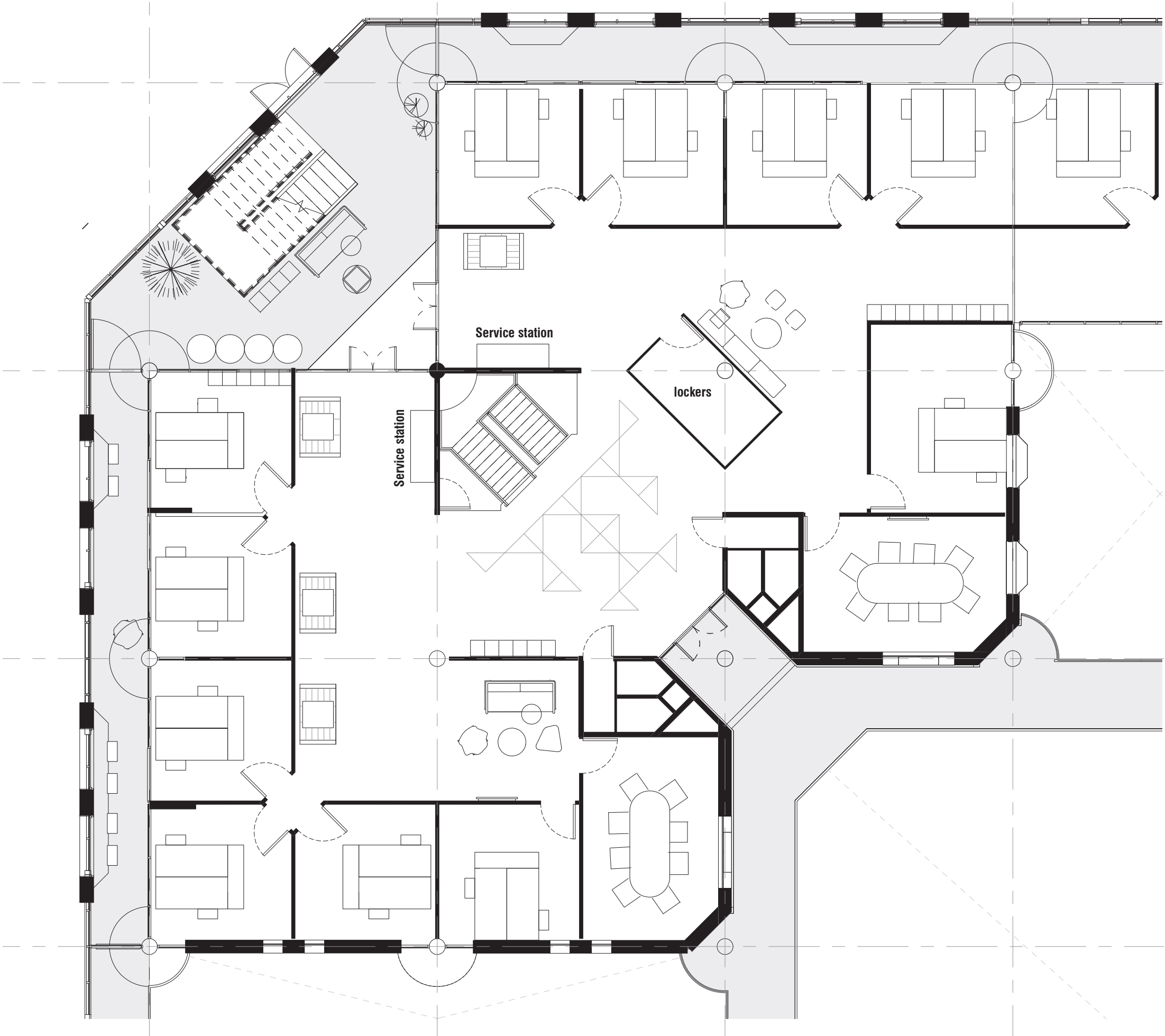
Fig. Sequence of perspective views South Cluster: Transformed lecture office interior, second floor open work desks below new atrium roof with view to greenery on outdoor terrace, preserved exterior appearance from Wittesingel square



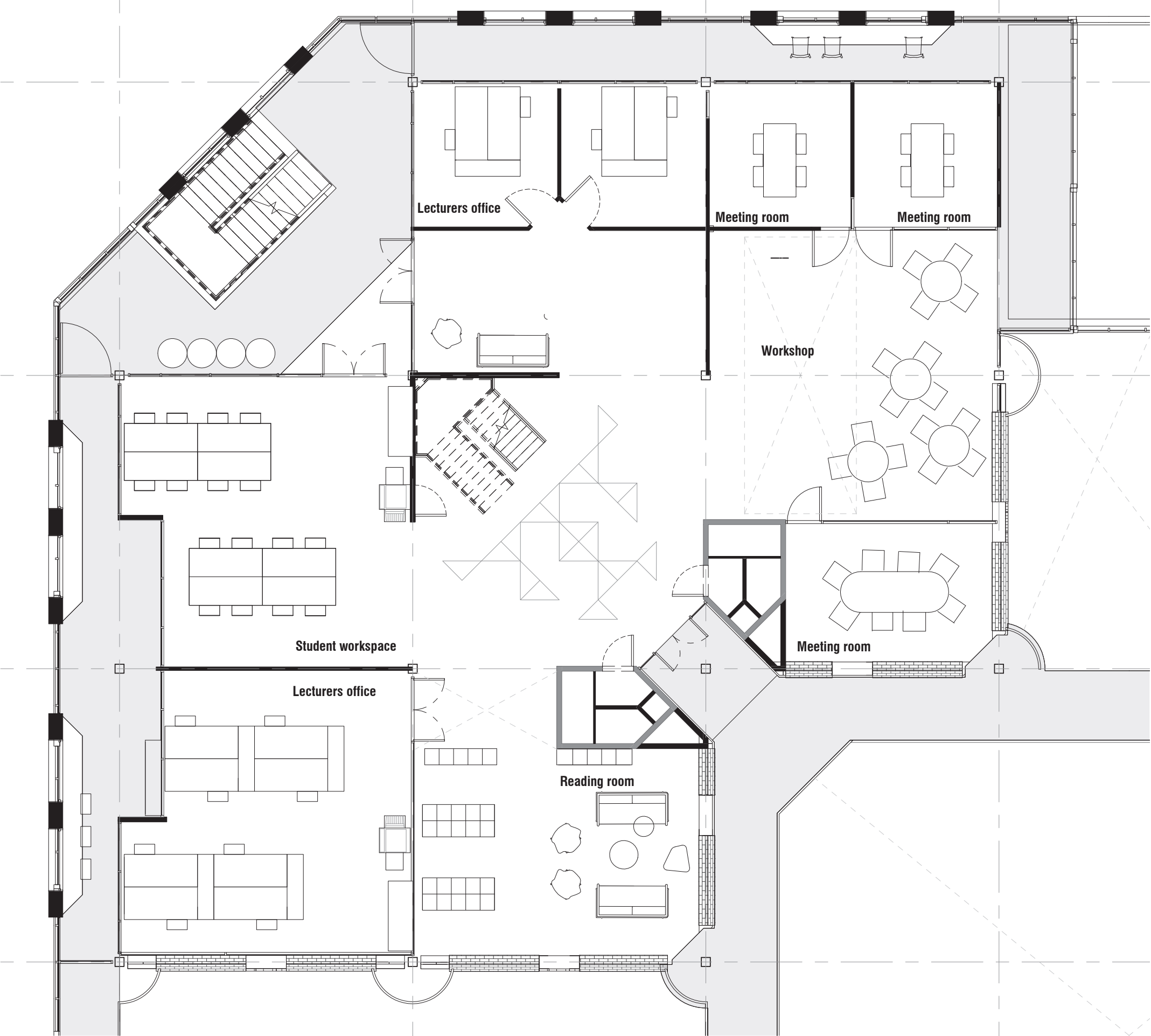
North cluster
Ground floor unit plan



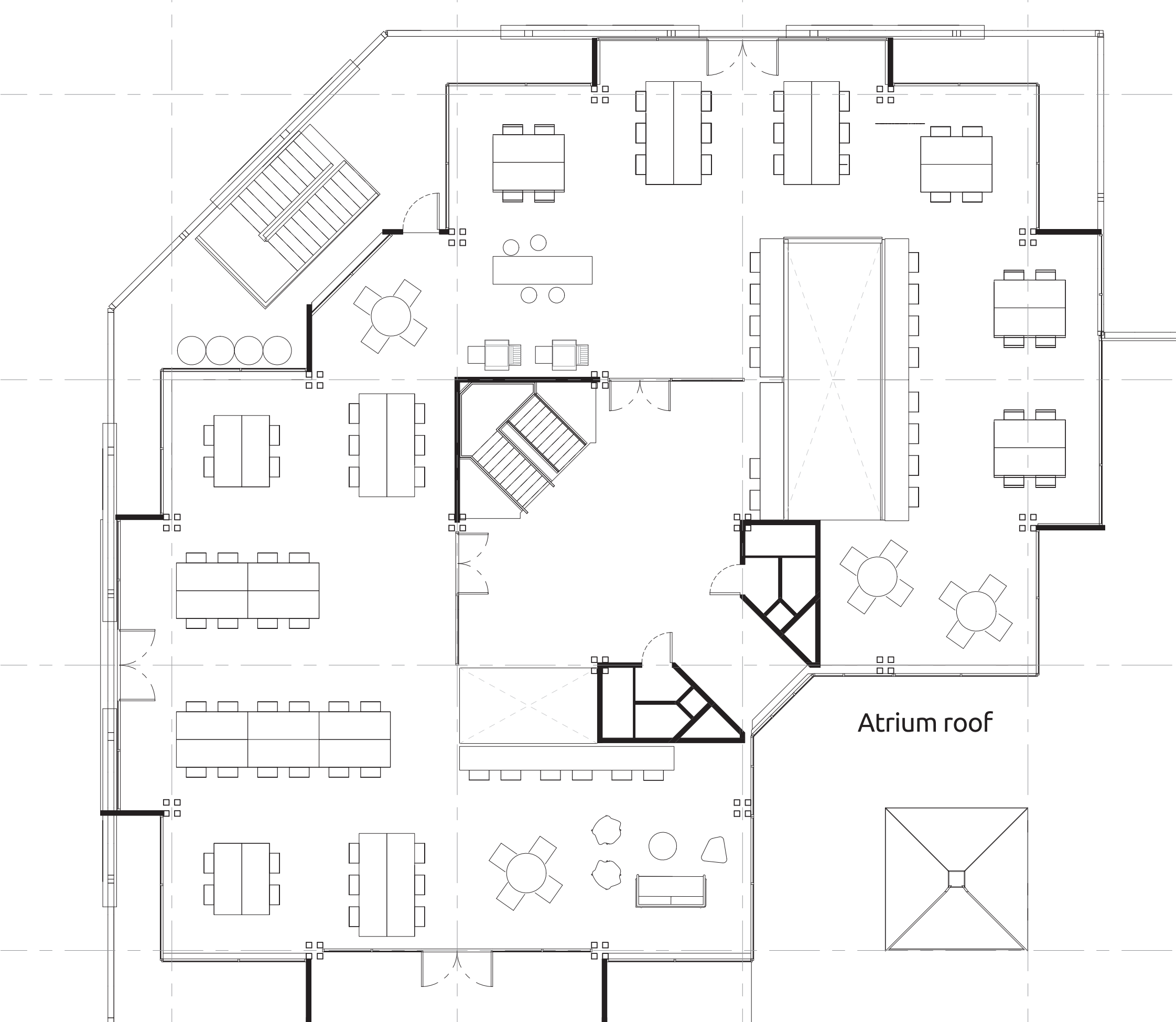
North cluster
First floor unit plan



North cluster
Second floor unit plan

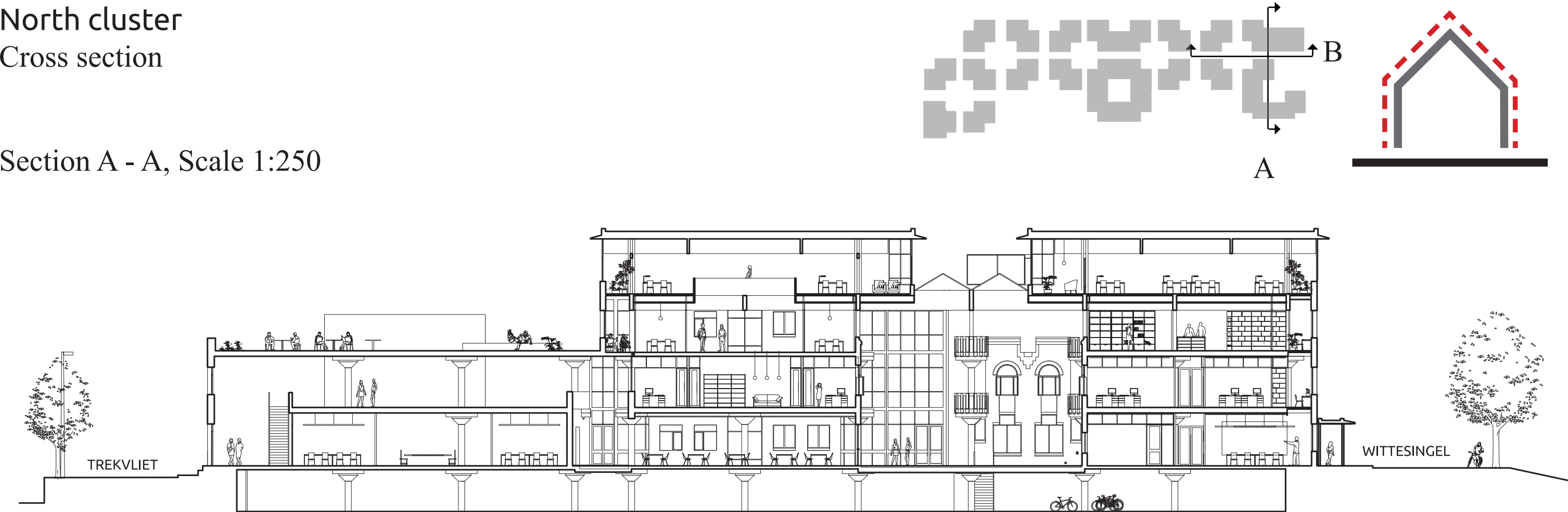


North cluster
Third floor unit plan

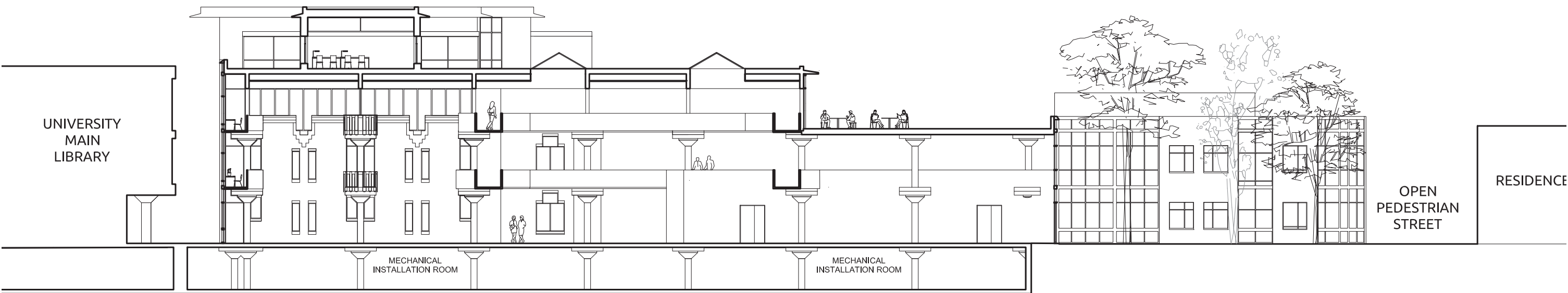


North cluster
Cross section

Section A - A, Scale 1:250



Section B - B, Scale 1:250



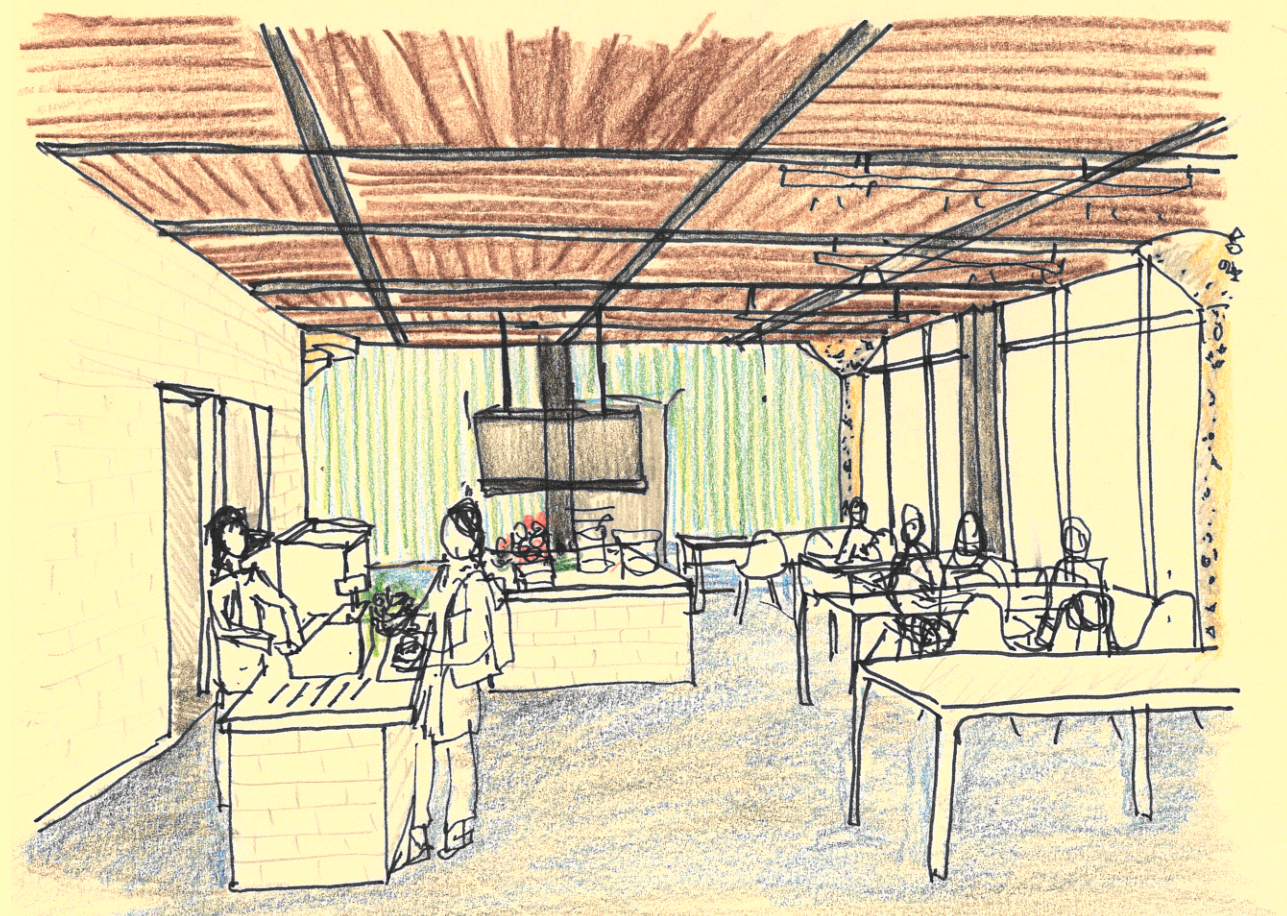
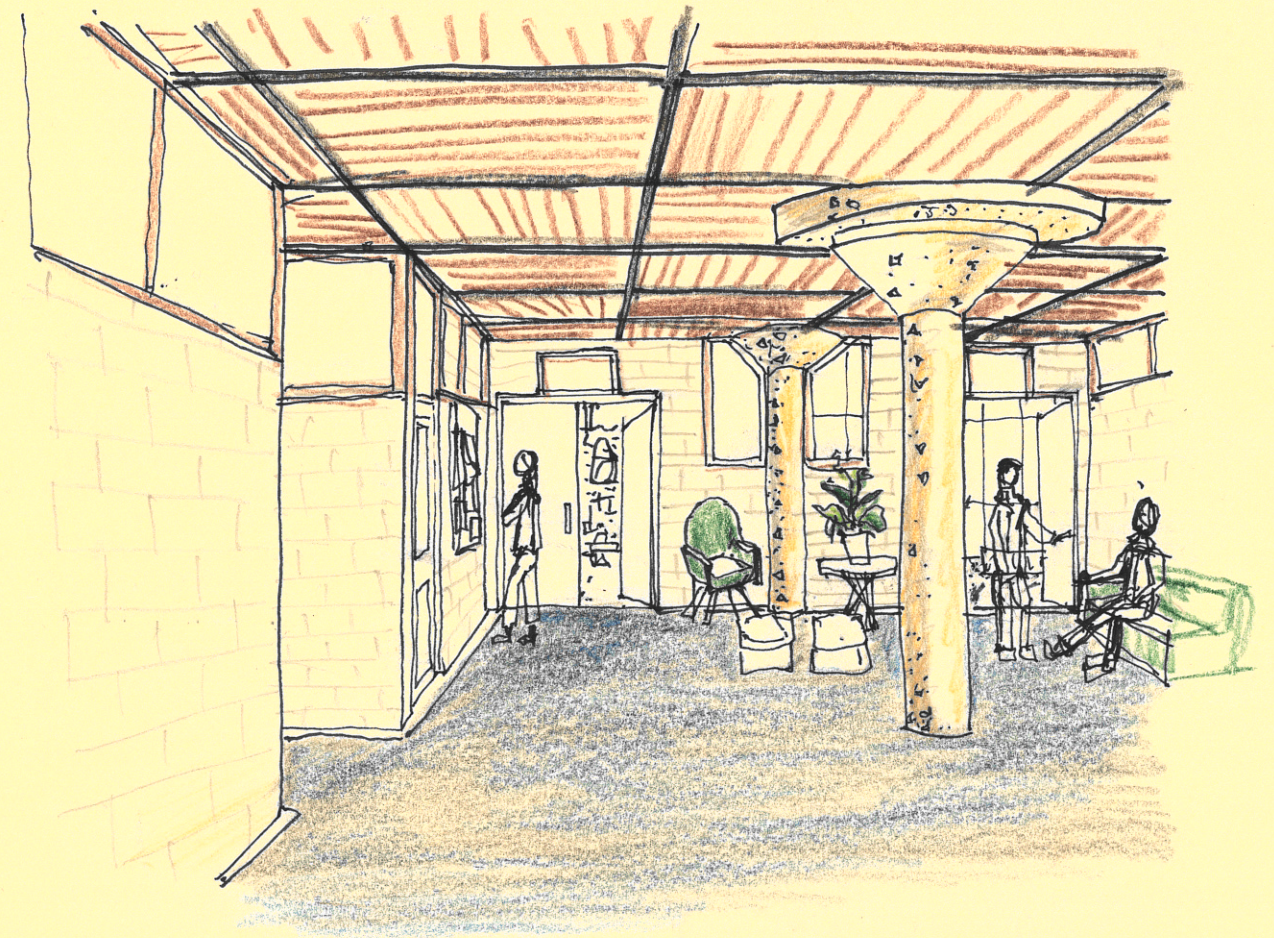


Fig. Sequence of perspective views North Cluster: Entrance approach under pergola, new foyer with doors towards courtyard atrium, covered atrium with preserved walls from courtyard, canteen with experience of ceiling and columns

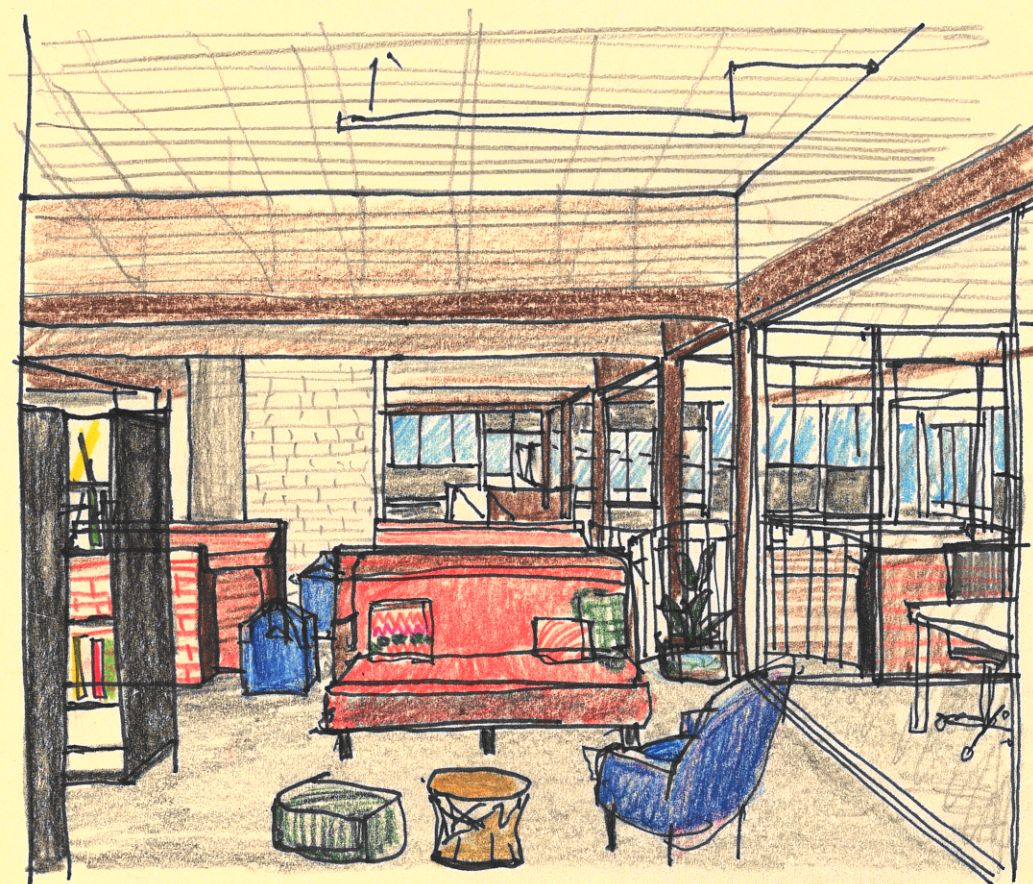
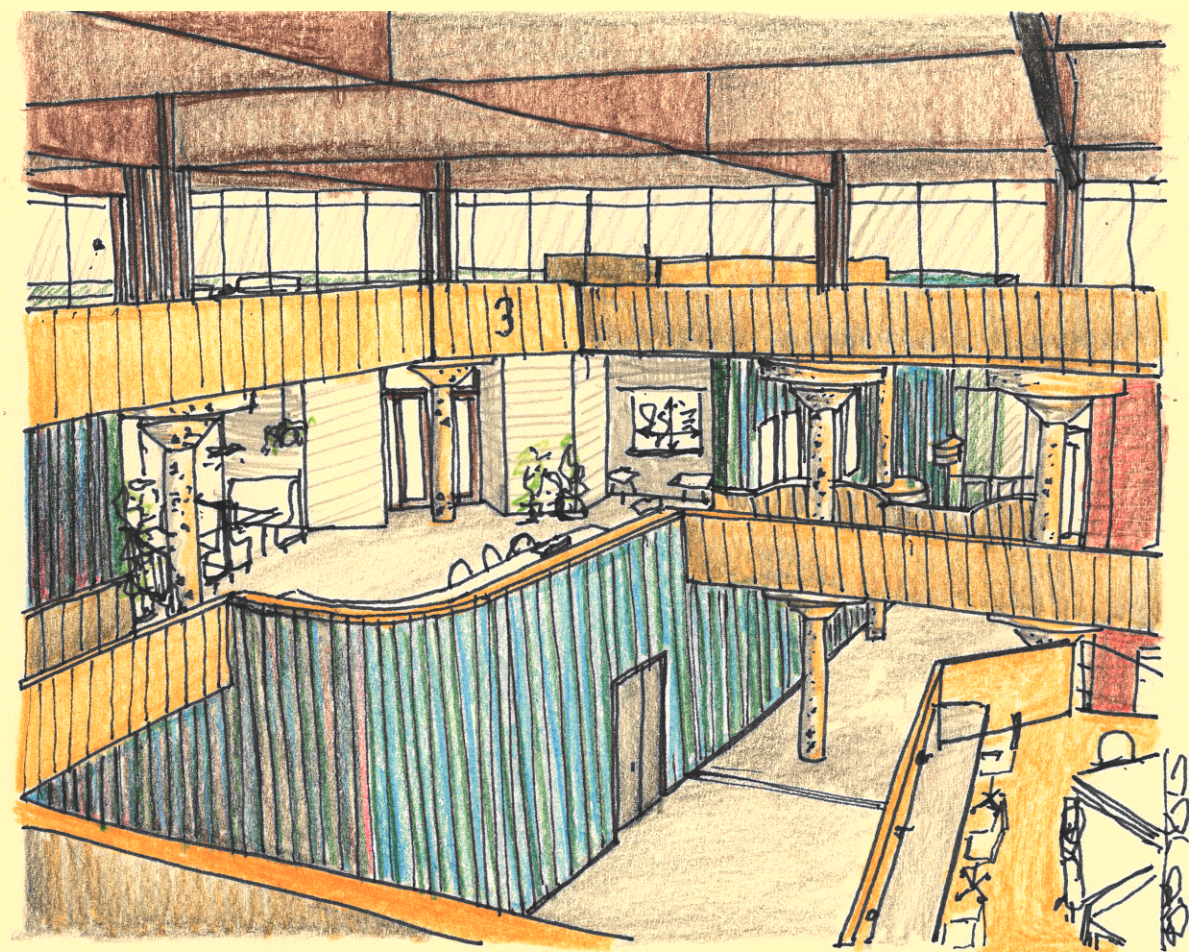
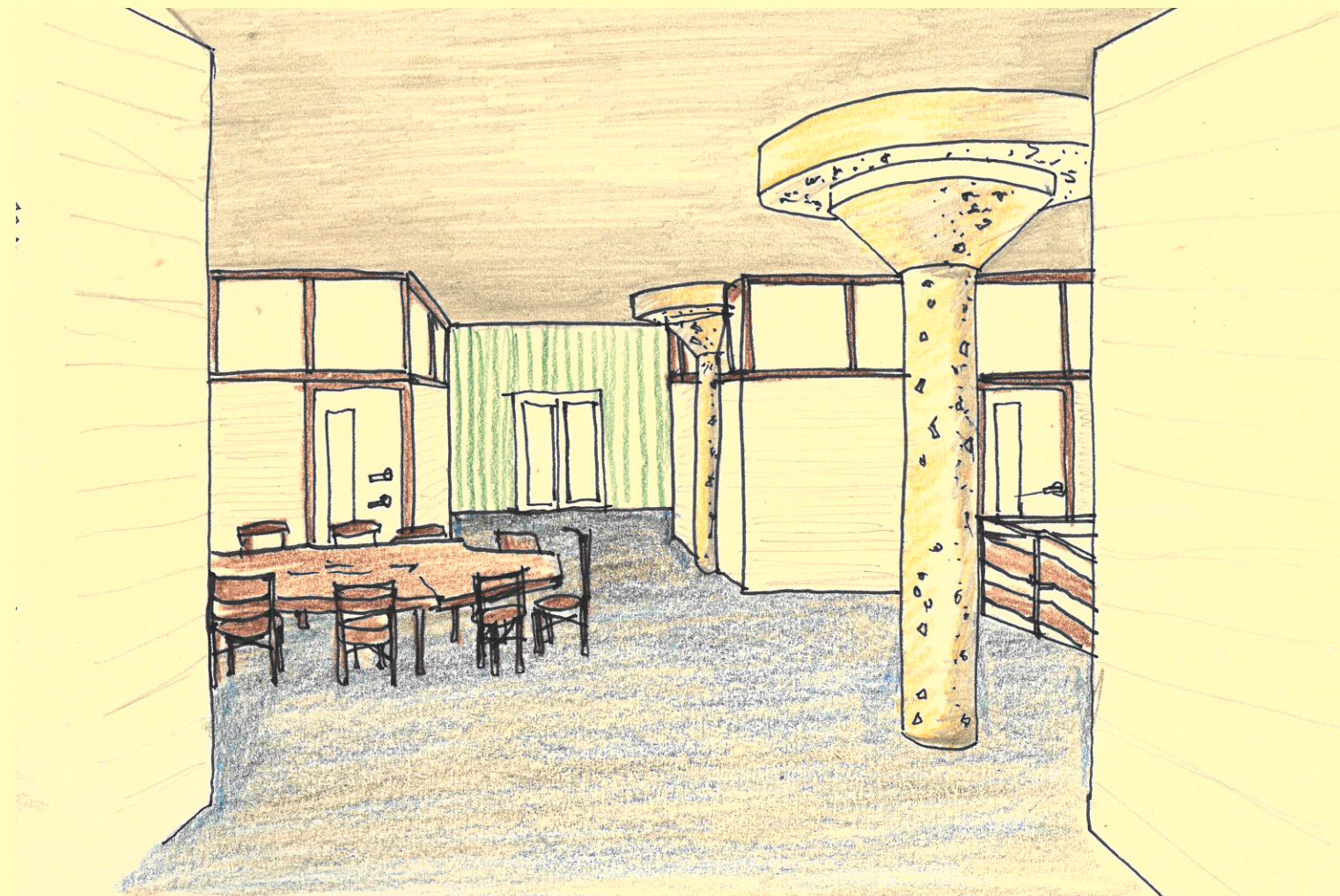


Fig. Sequence of perspective views North Cluster: View towards other atrium, preserved original furniture in PHD centre, view of collaborative platforms in the courtyard. Reading corner on old concrete slab and below new added floor level.

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B. Urban context in relation to site

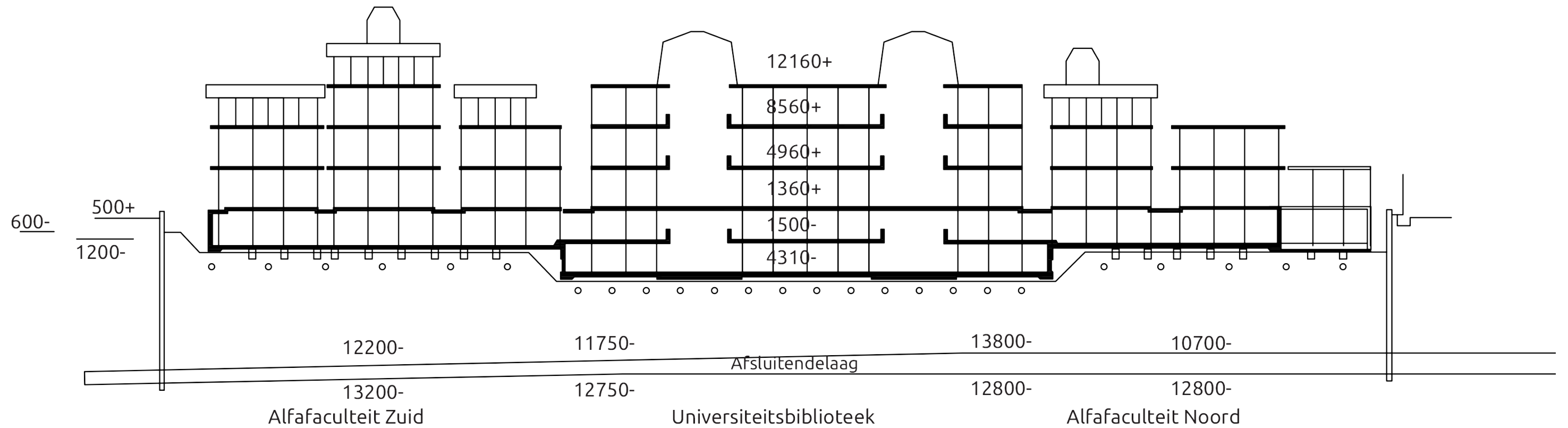
C. Building clusters in relation to units

D. Choosing a position

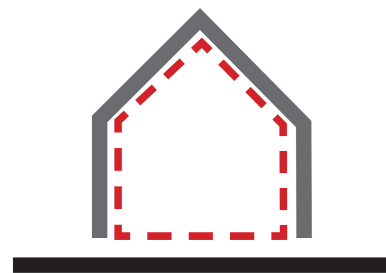
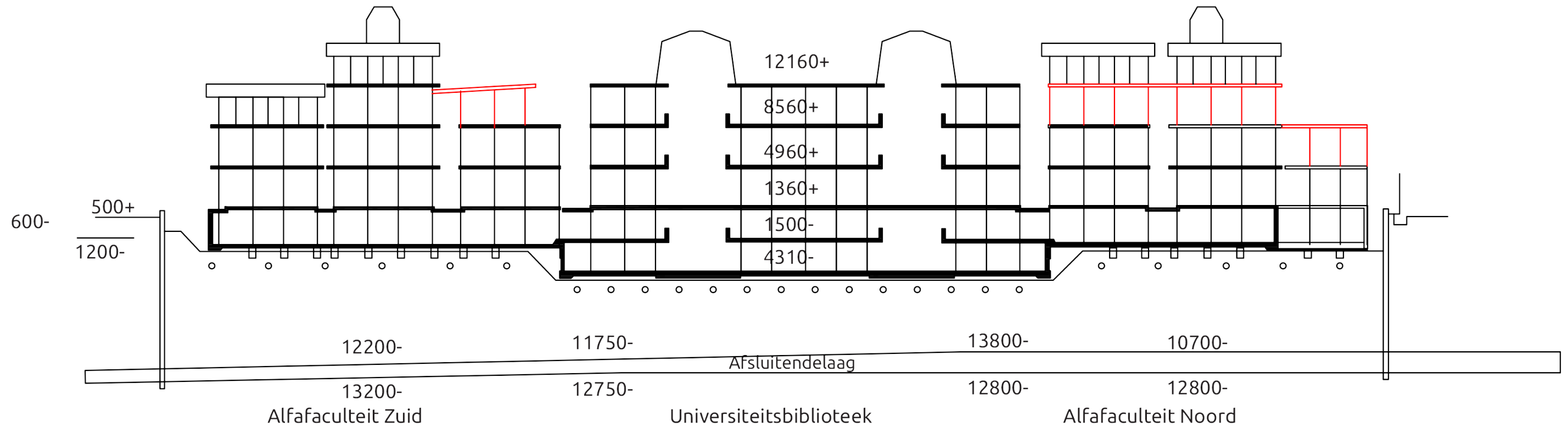
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F. Conclusion: position

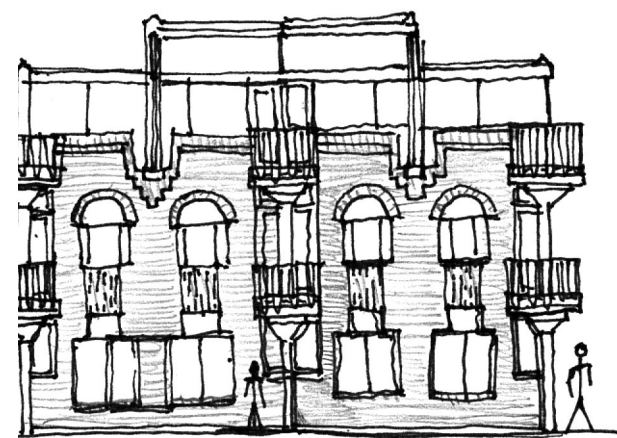
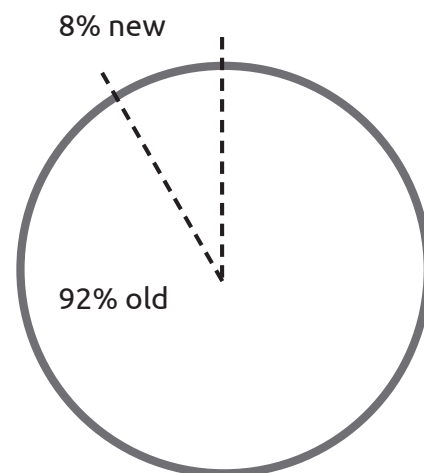
Original structural diagram across entire site



Dialectics design method evaluation



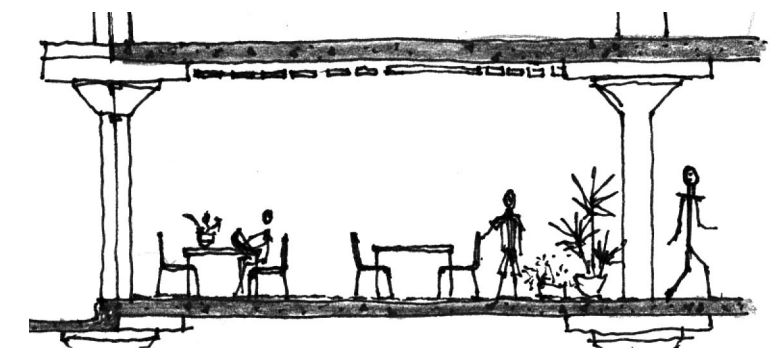
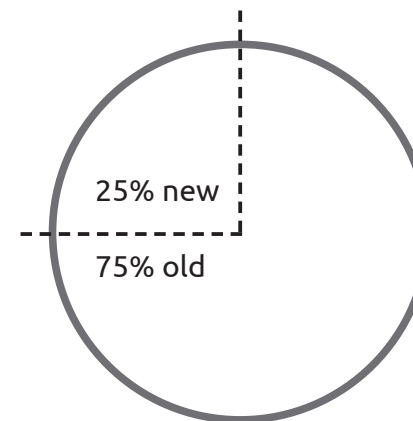
Floor area
= 15745 sqm



Material preserved:
Red brick skin exterior



Floor area
= 13730 sqm



Material preserved:
Exposed aggregate
concrete (gewassen
beton) surface interior

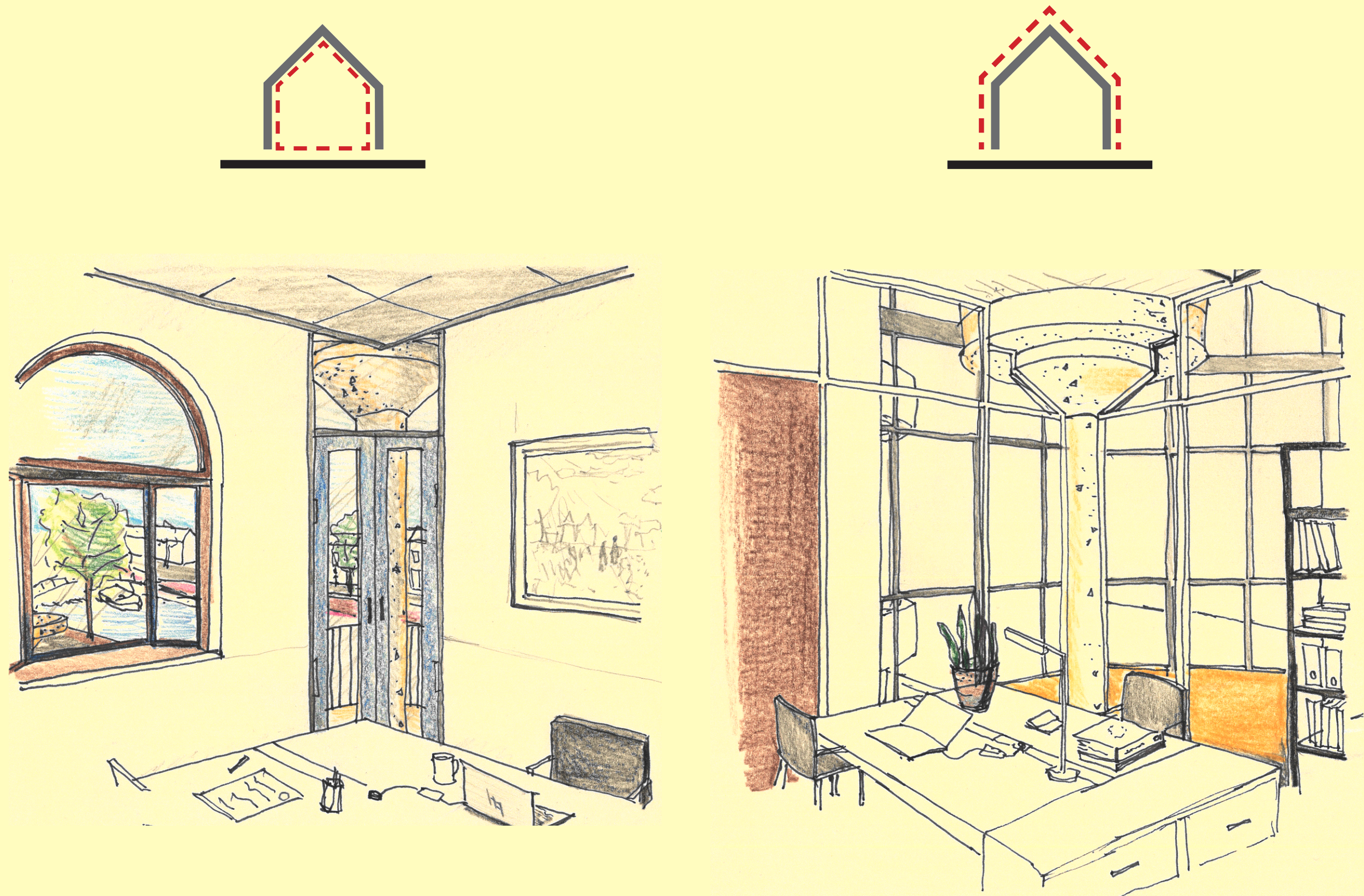


Fig. Spatial result of office interior due to surface transformation approach in comparison to skin transformation approach
(Final conclusion: transform the skin and preserve surface materials and experience of Structuralism for future users.

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Deconstruction process of timber roof structure

Deconstruction (Temporarily) roof.

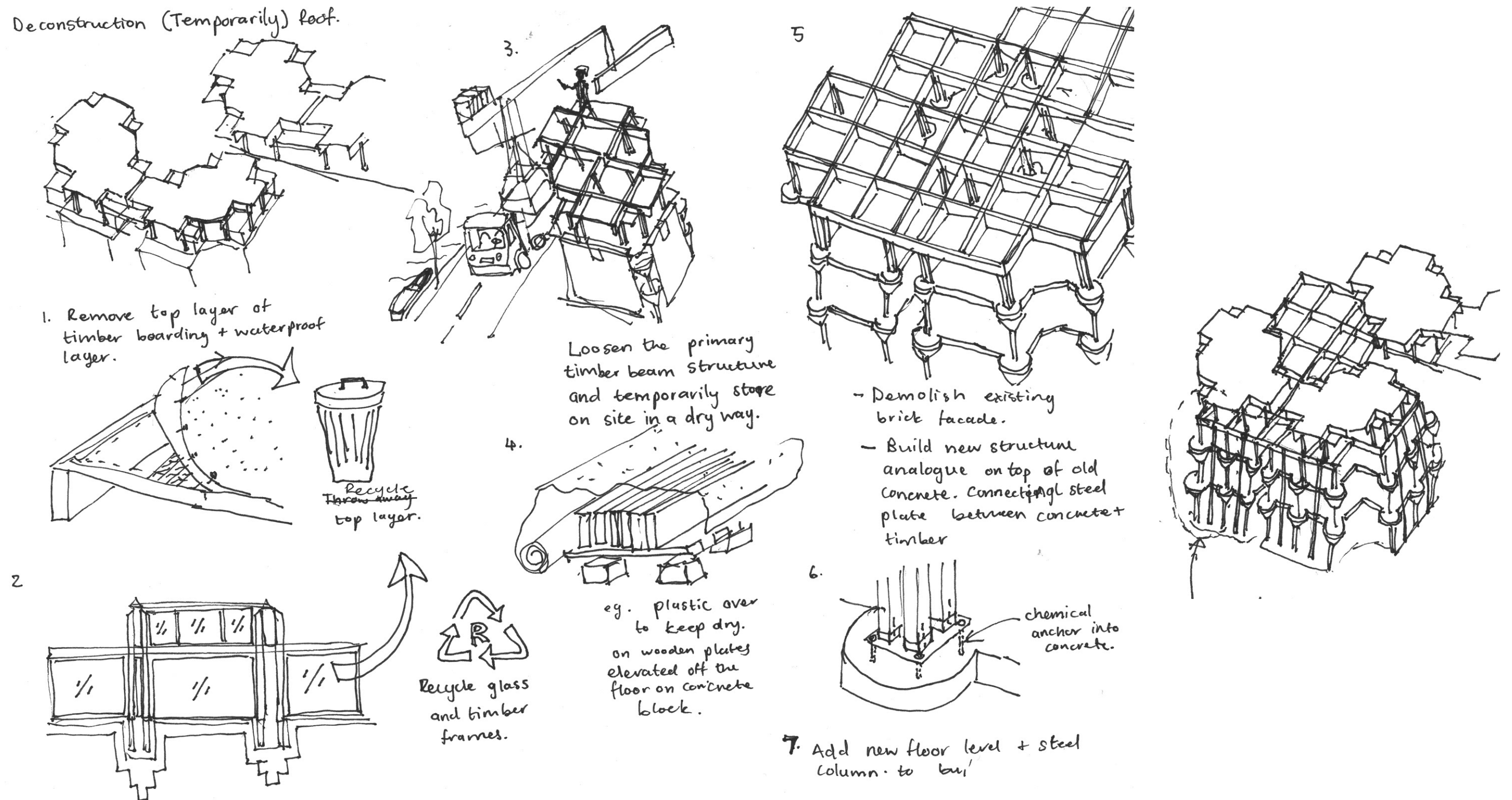
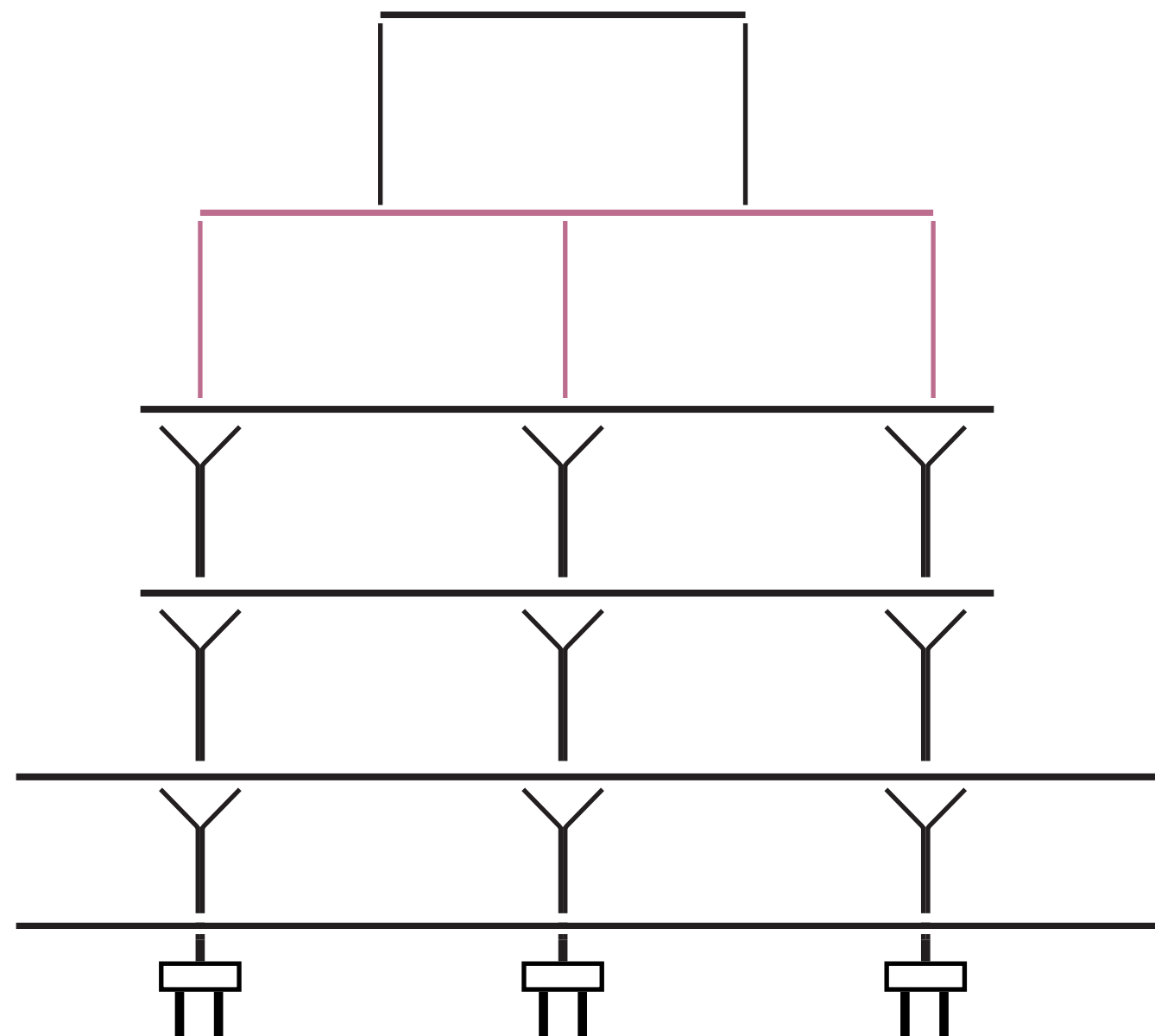
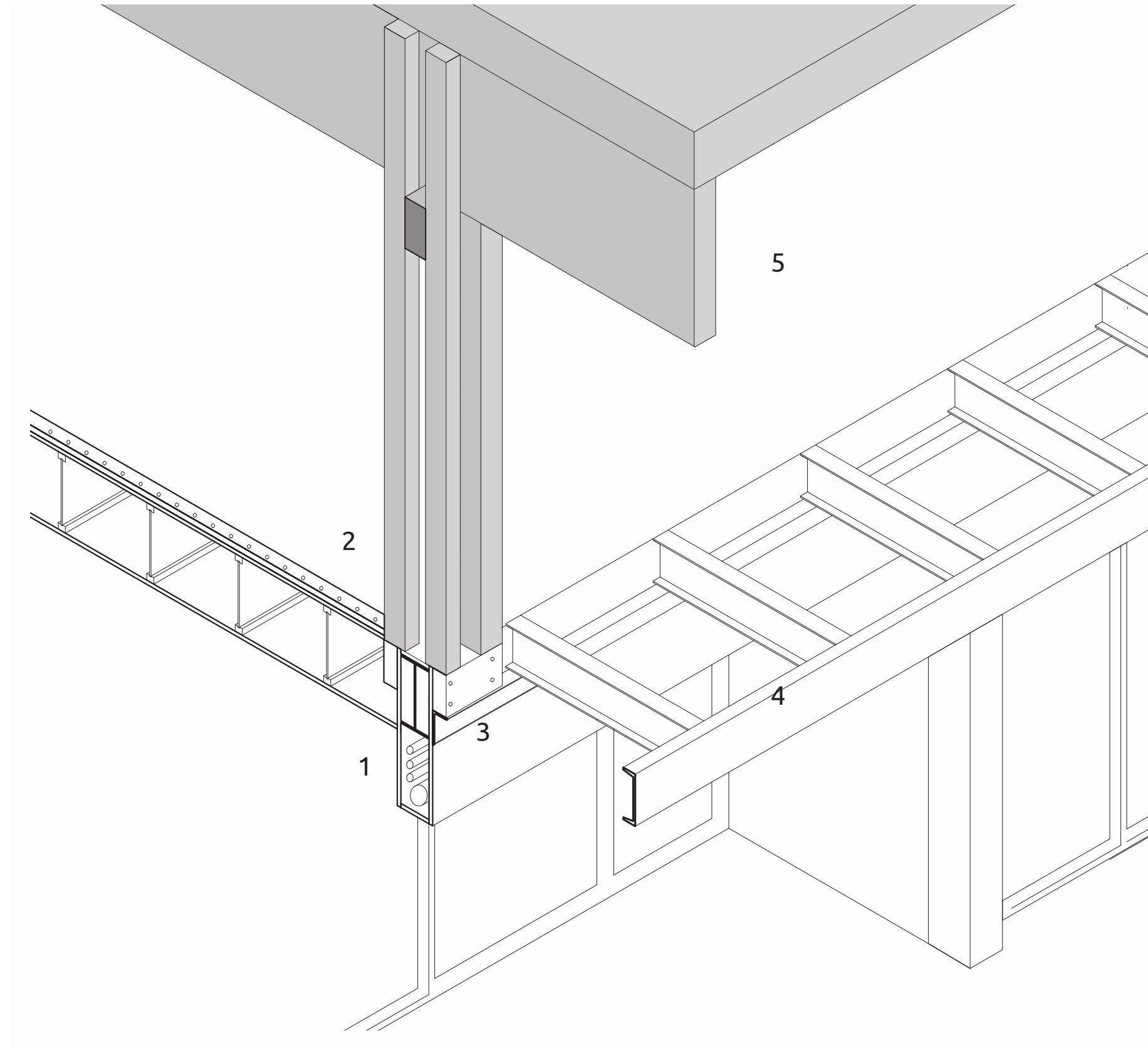


Fig. Cartoon of the deconstruction process of the existing timber roof structure to be reassembled one floor level up. Embodied energy in material preserved and cultural value of roof structure reused.



Detail G

Green roof and facade cladding



1 - New 420x180 steel I beam cladded in red-wood timber box with opening latch to access service cables.

2 - New IJC composite timber floor joist beams spanning between 90x 140mm red-wood laminated timber beams. Plywood floor-board. 70mm suspended screed with intergrated water piping system. Polished screed floor finish

3 - Base thickening of beam with timber blocks to support existing column above.

4 - Extension floor:

250mm L- profile steel edge beam.

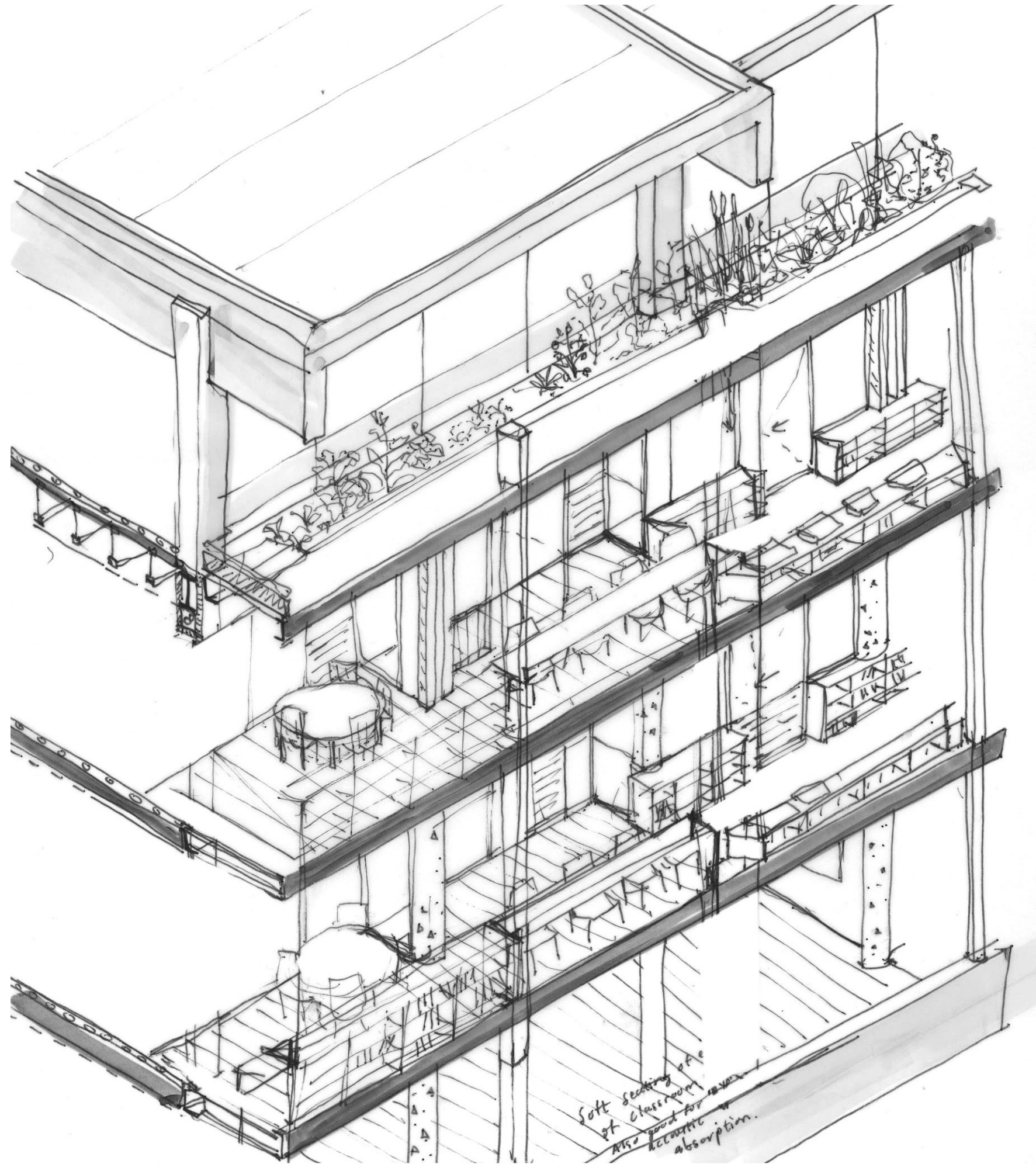
Steel I-beam floor joist, 600mm spacing.

Steel floor plate (30min fireproof rating)

Acoustic floor insulation

Redwood floor boarding

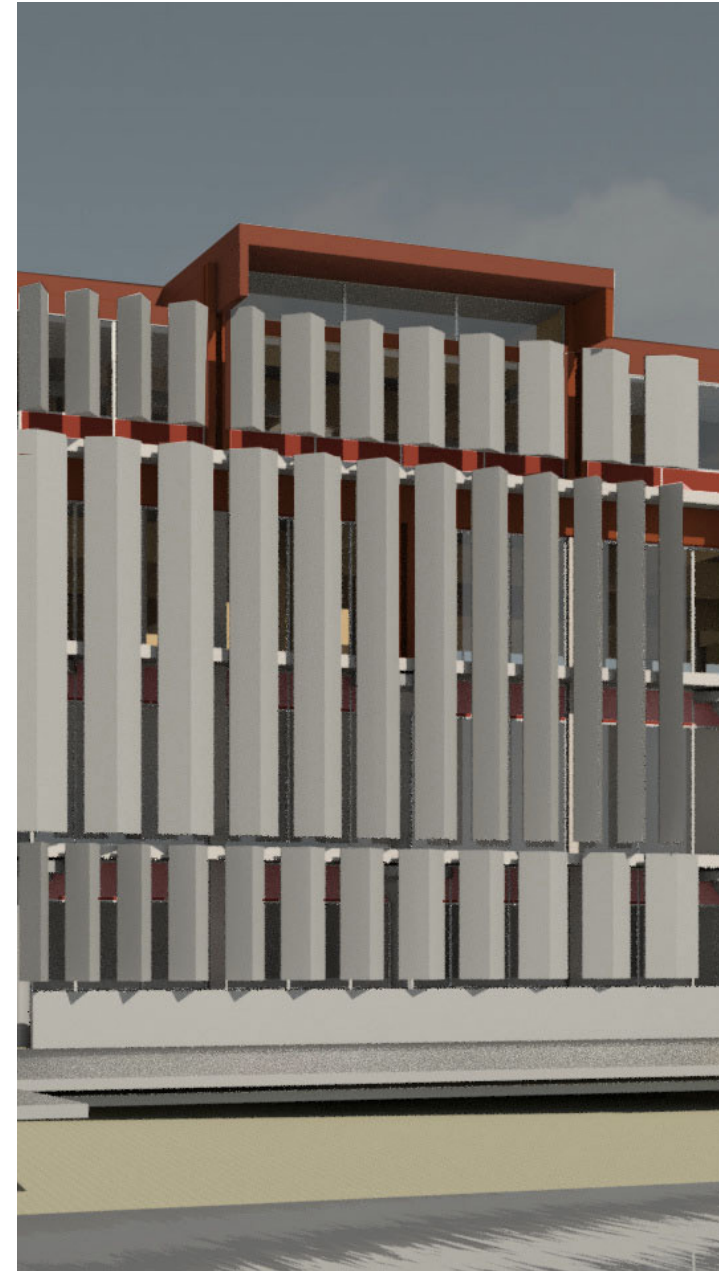
5 - Reused roof structure



Facade investigation



Reveal structure



Cover structure



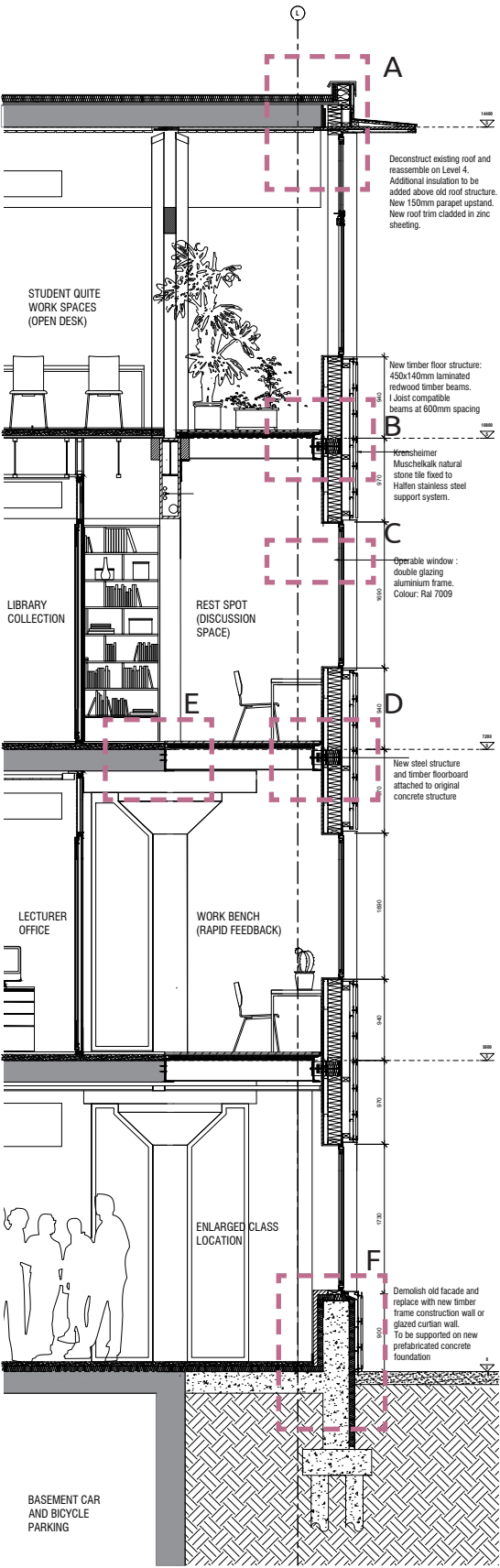
Light glass curtain wall



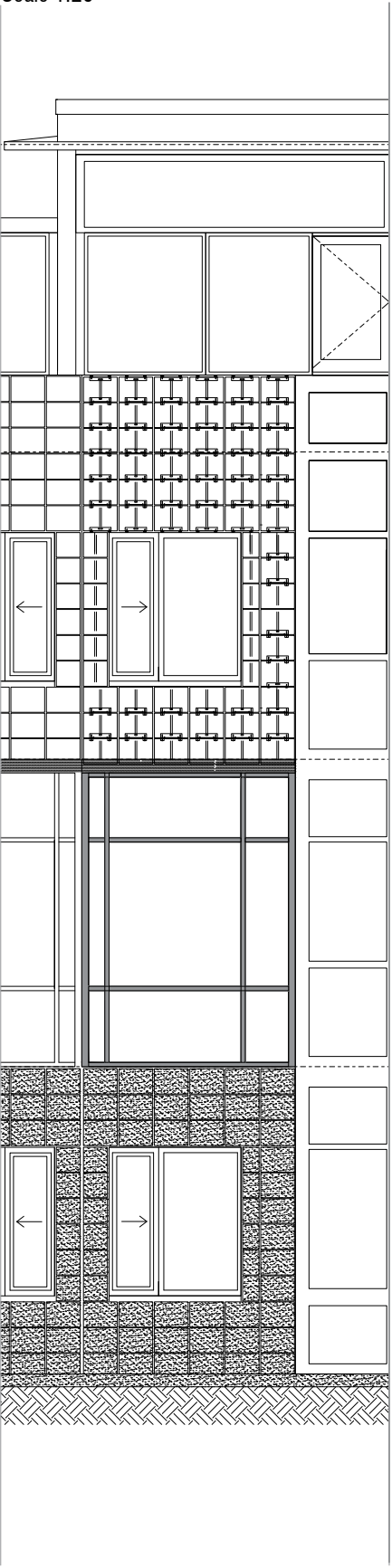
Heavy concrete wall



Scale 1:20



Scale 1:20



Scale 1:20

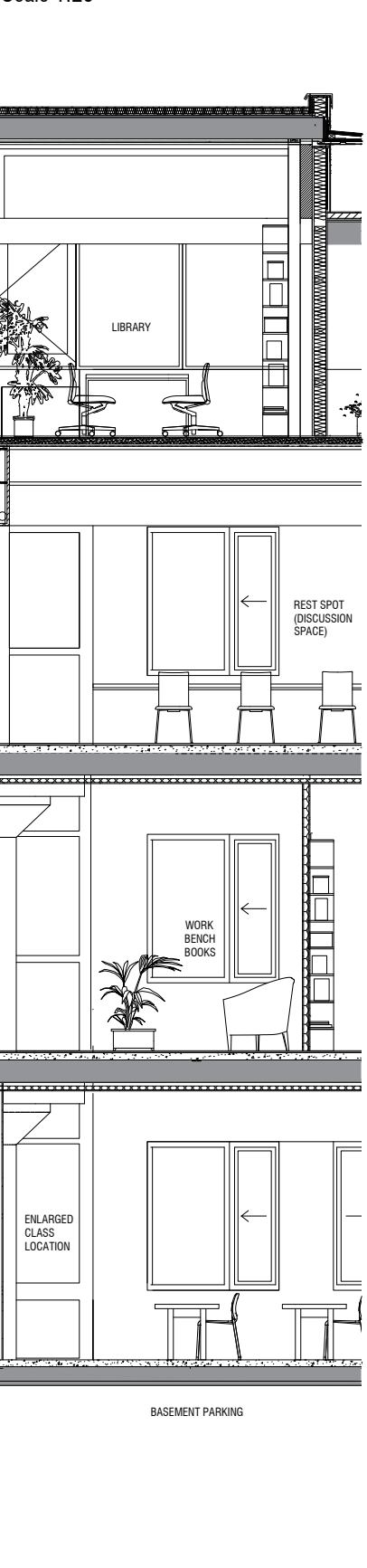
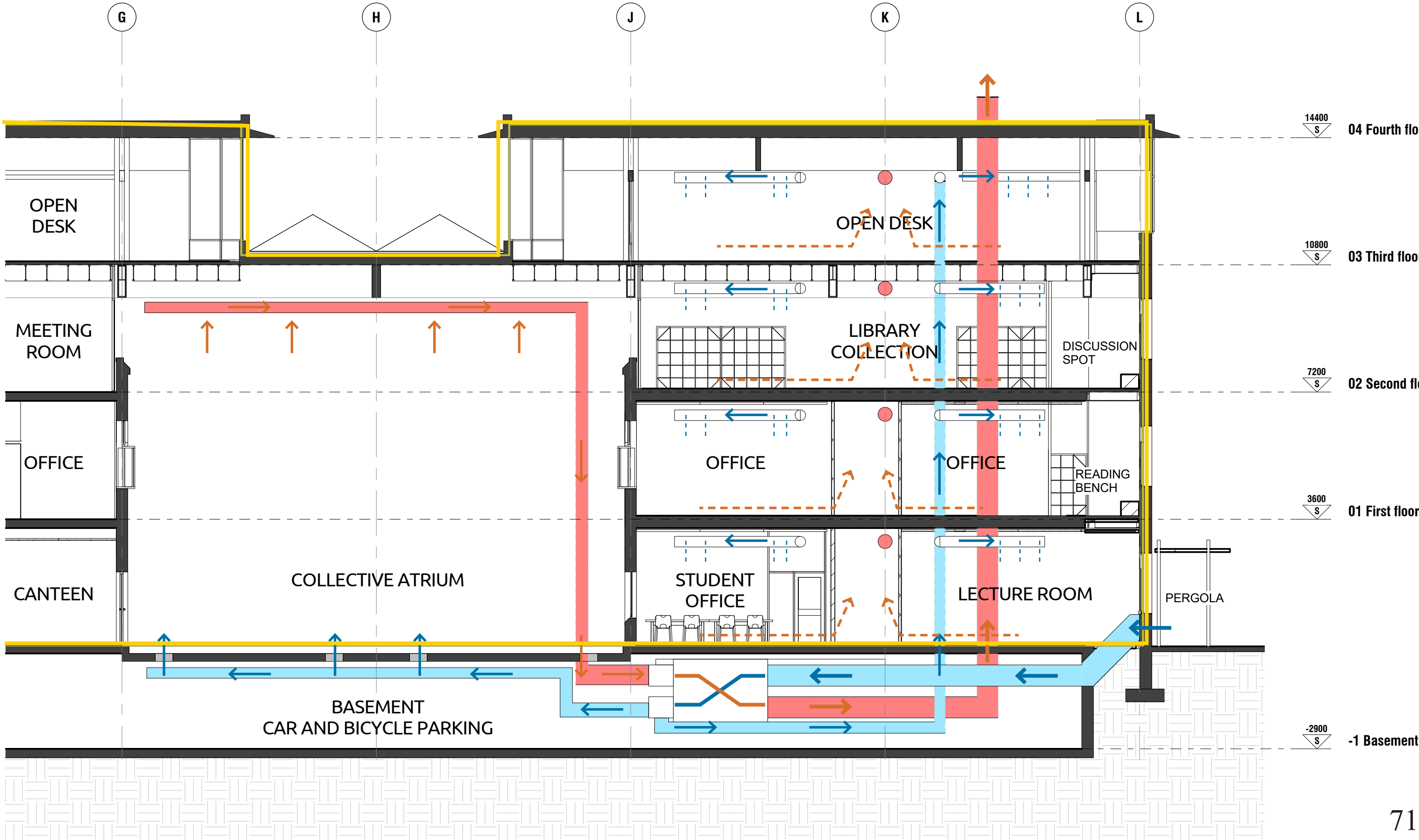


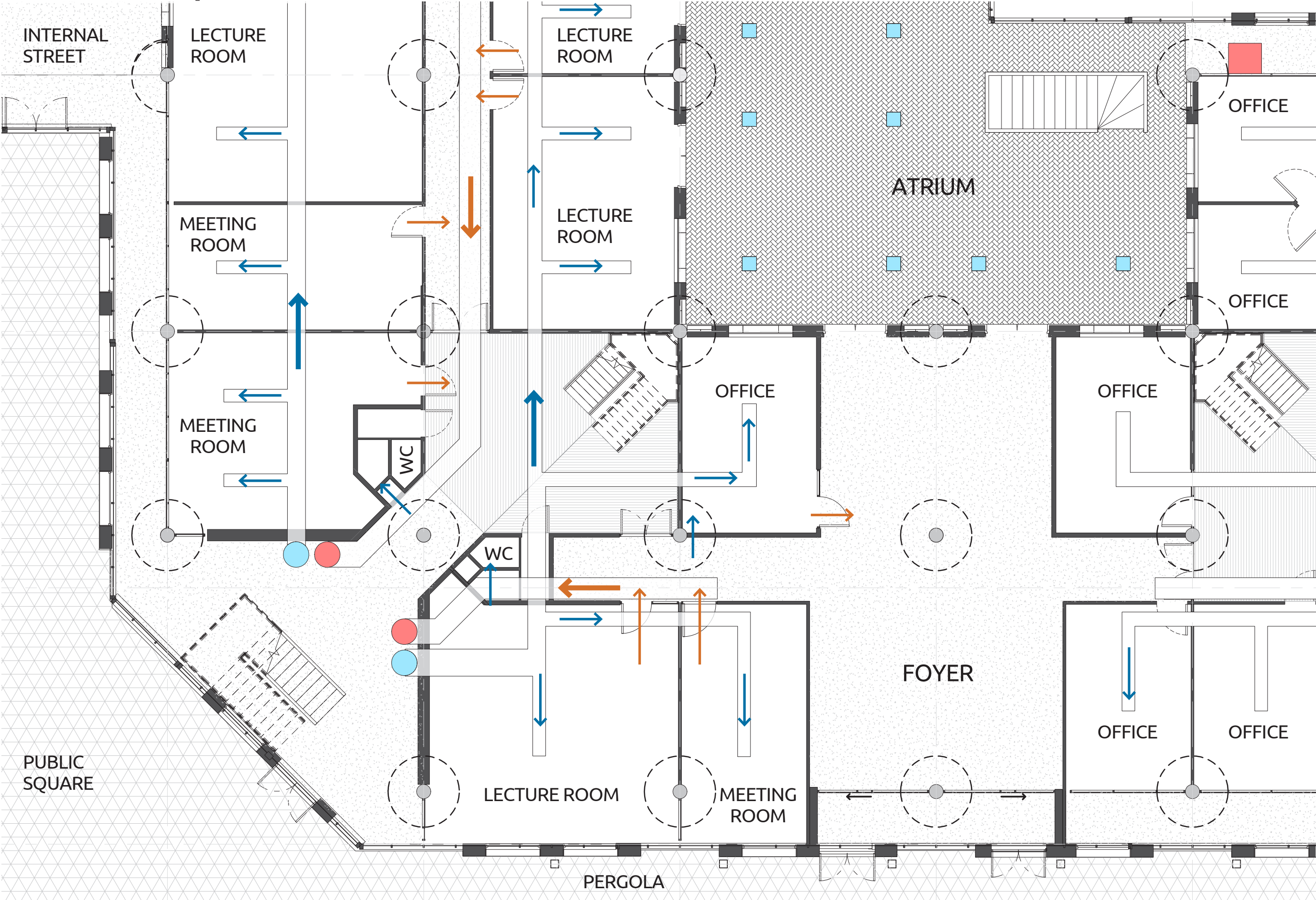


Fig. Perspective view illustrating new building installations and material finishes

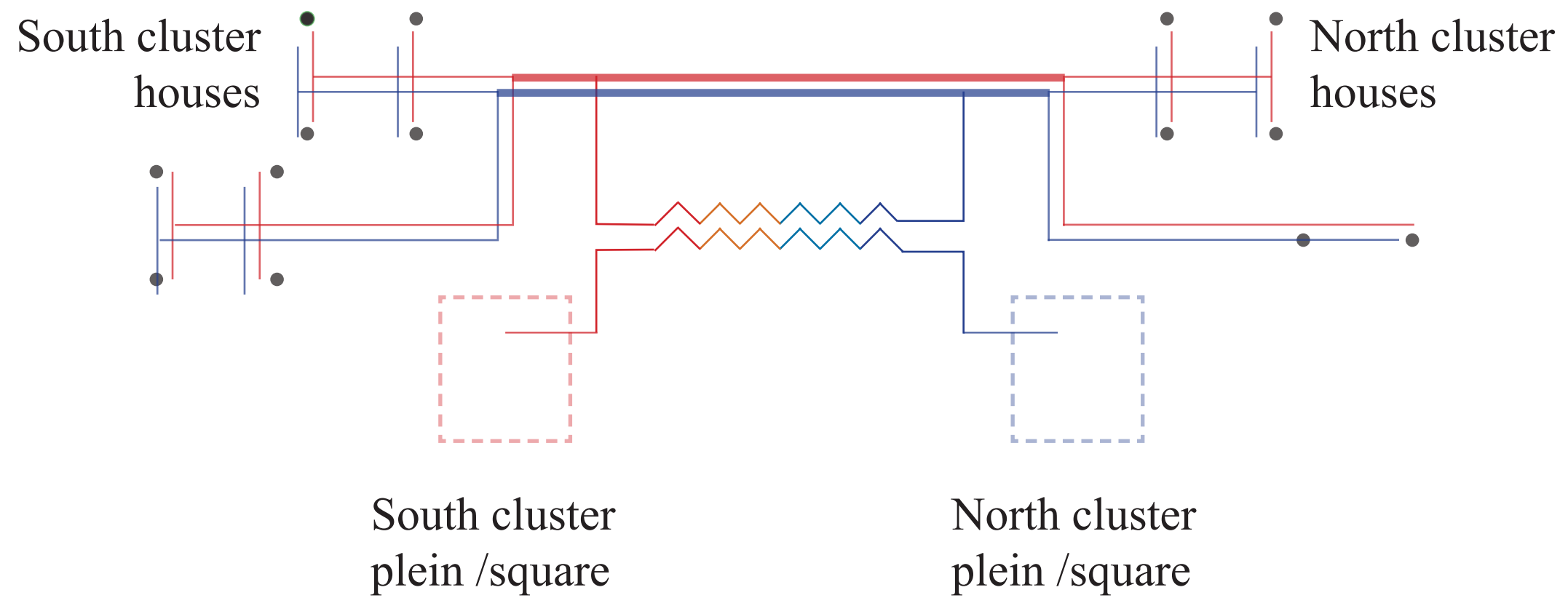
Ventilation section



Ventilation plan



Heating and cooling aquifers

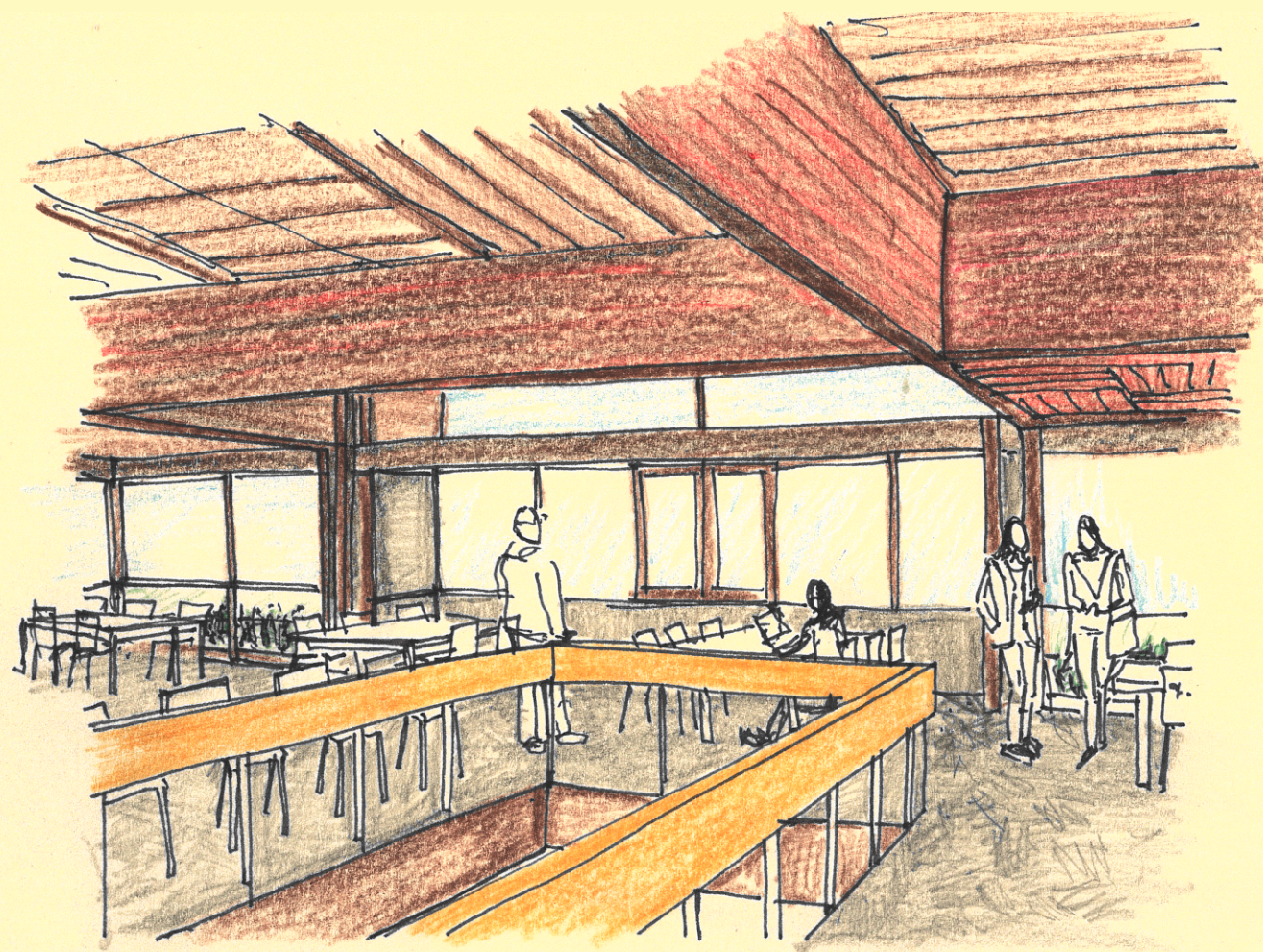
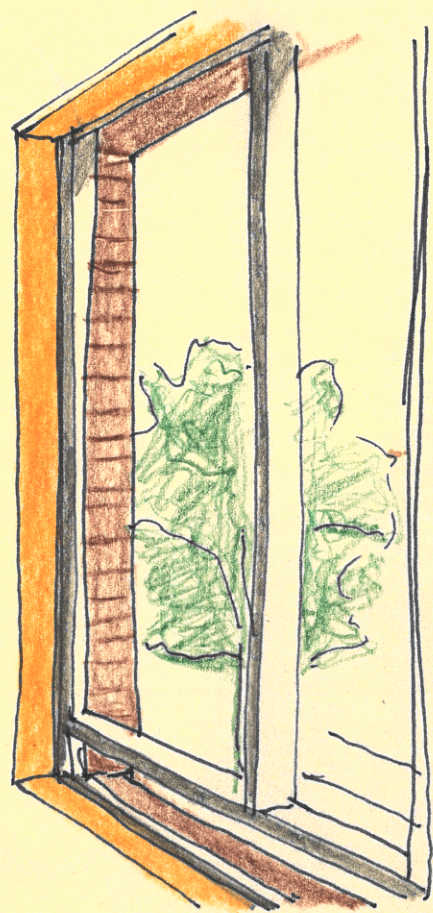


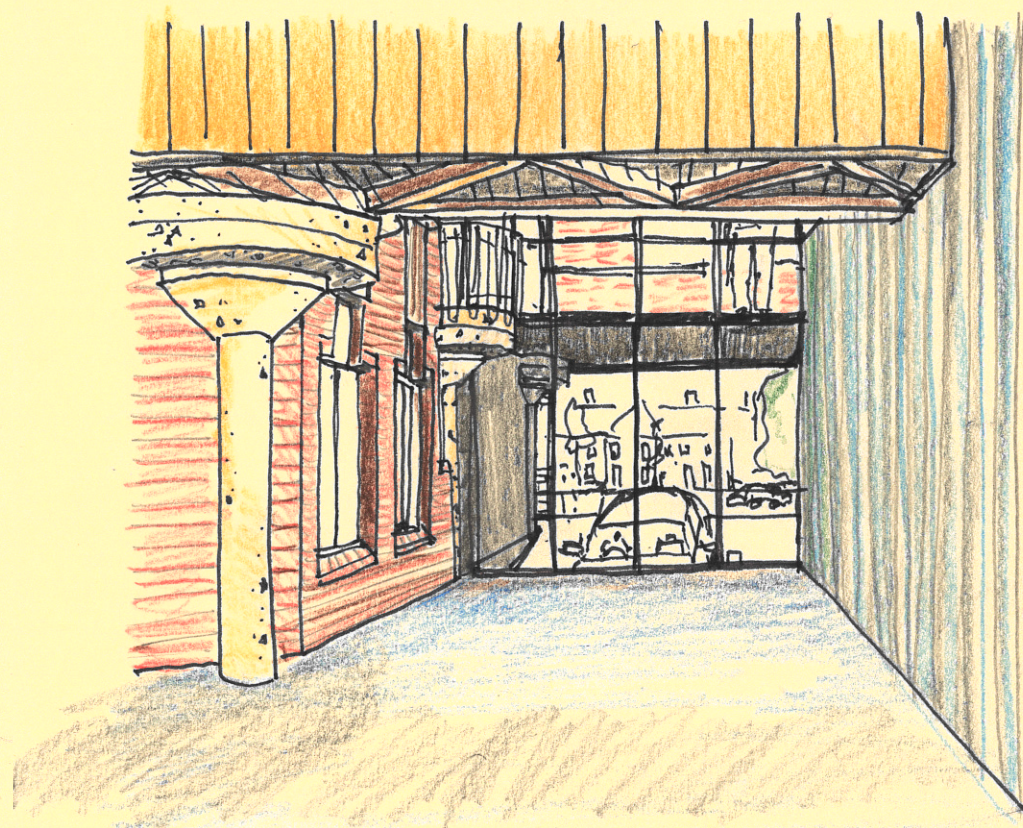
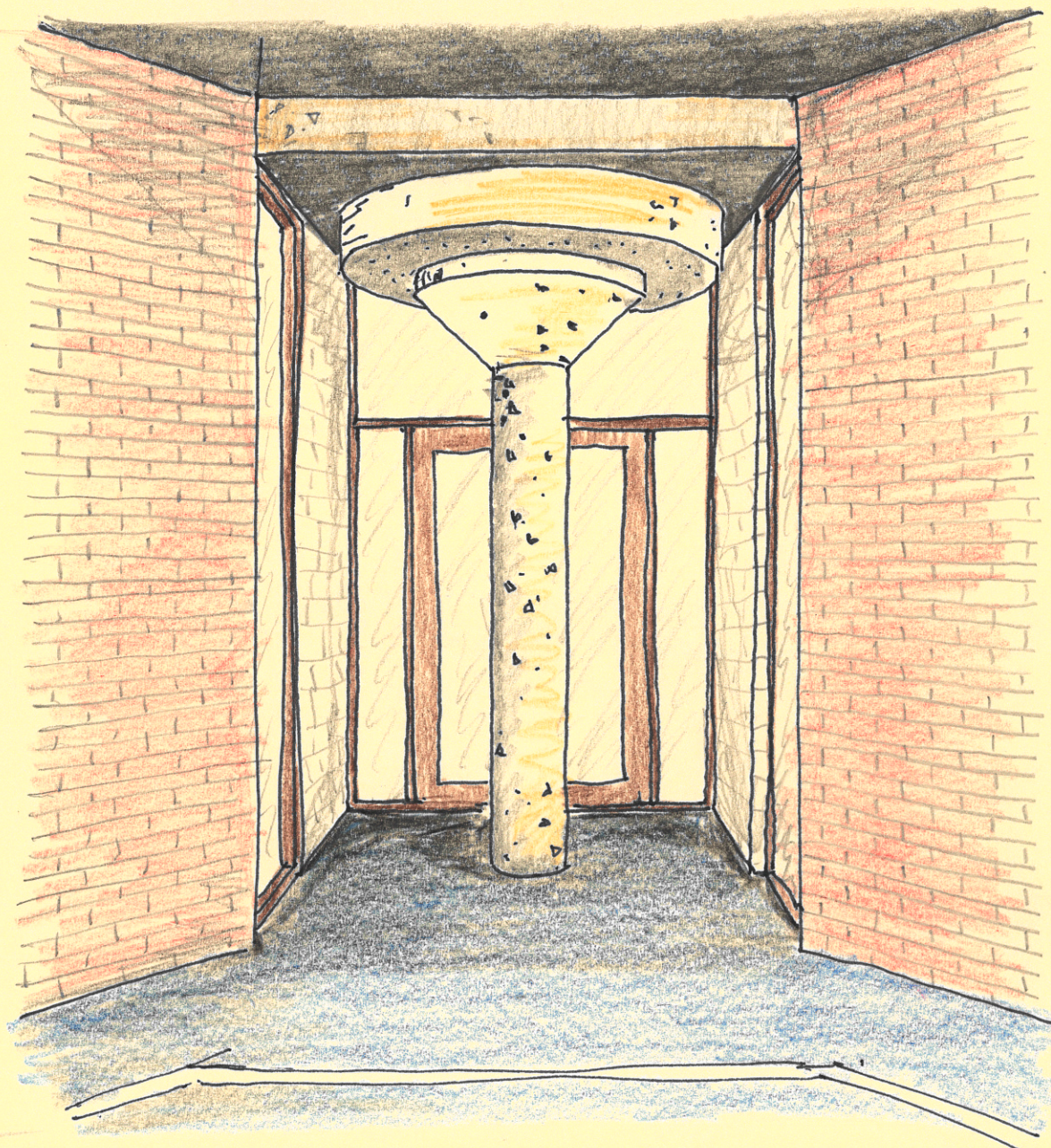
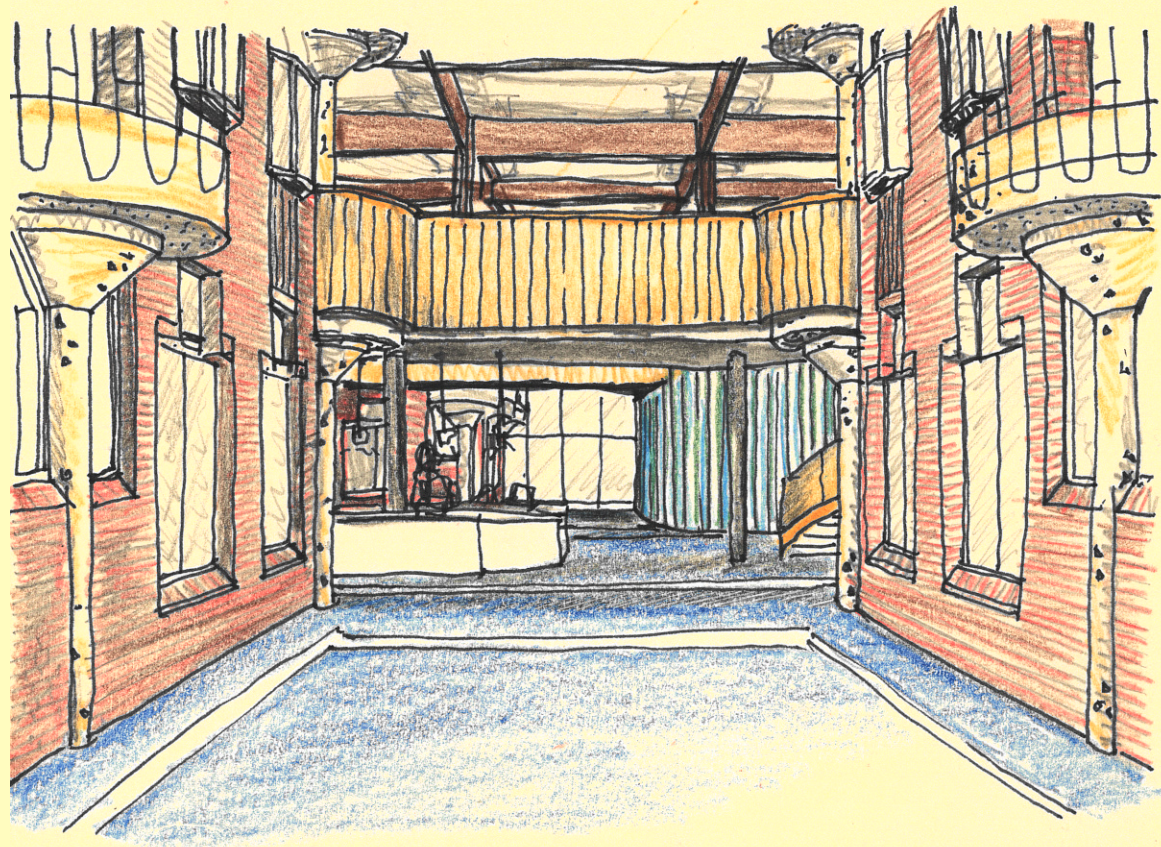
Materials old



Materials new







Content

Testing to formate a position

A. Theoretical background

B. Urban context in relation to site

C. Building clusters in relation to units

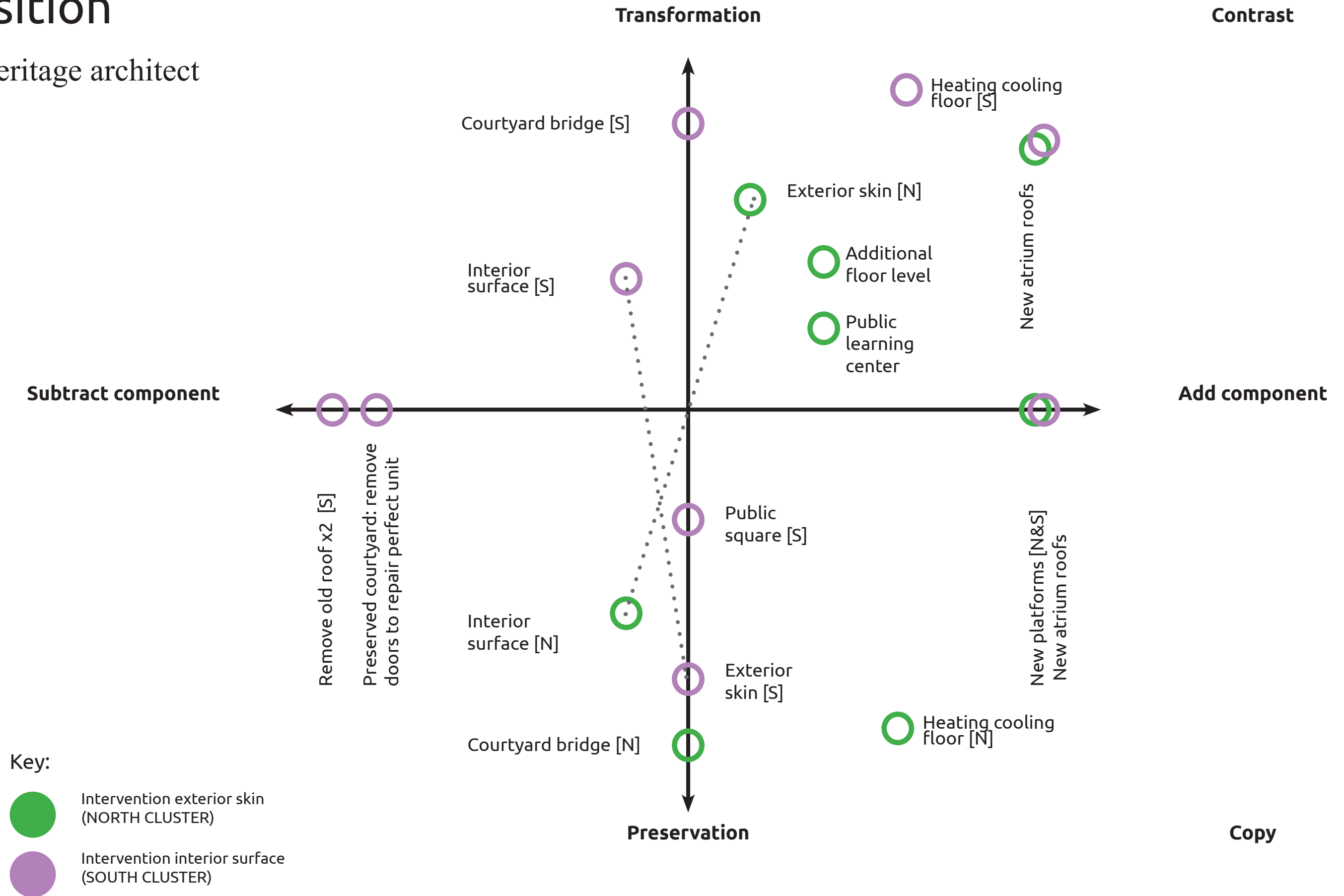
D. Choosing a position

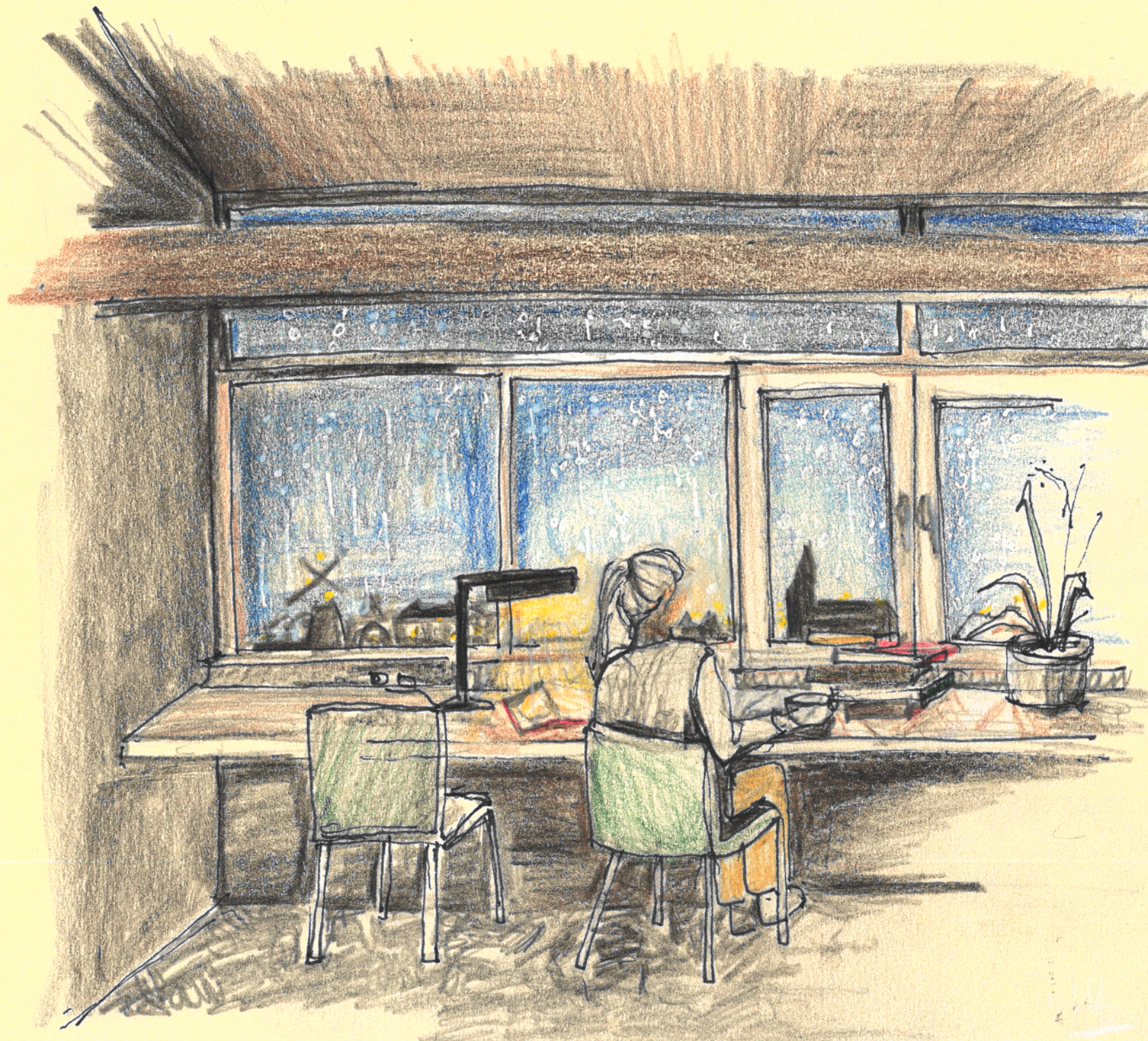
E. Technical details connecting old and new

F. Conclusion: position

Position

As heritage architect





Cover

Recover

Reveal

Concluding remark: By sacrificing a layer (skin/surface) the thermal bridges may be resolved. Through the analysis, old building materials may be recovered and reused by creating simple detailing solutions. The university learning environment may continue to enjoy the spirit of structuralism which is revealed to its future users.

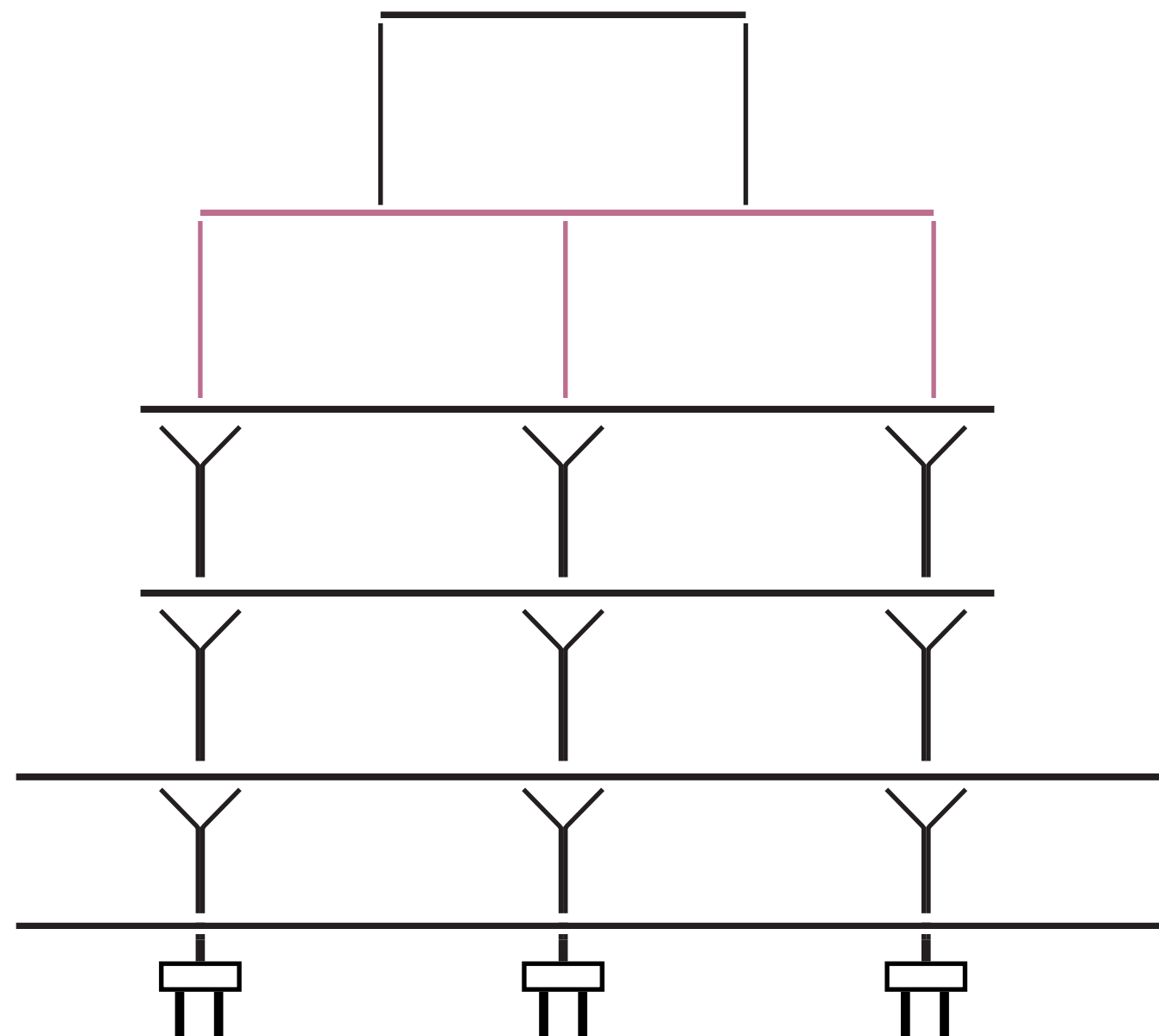


Thank you for listening!

Questions?

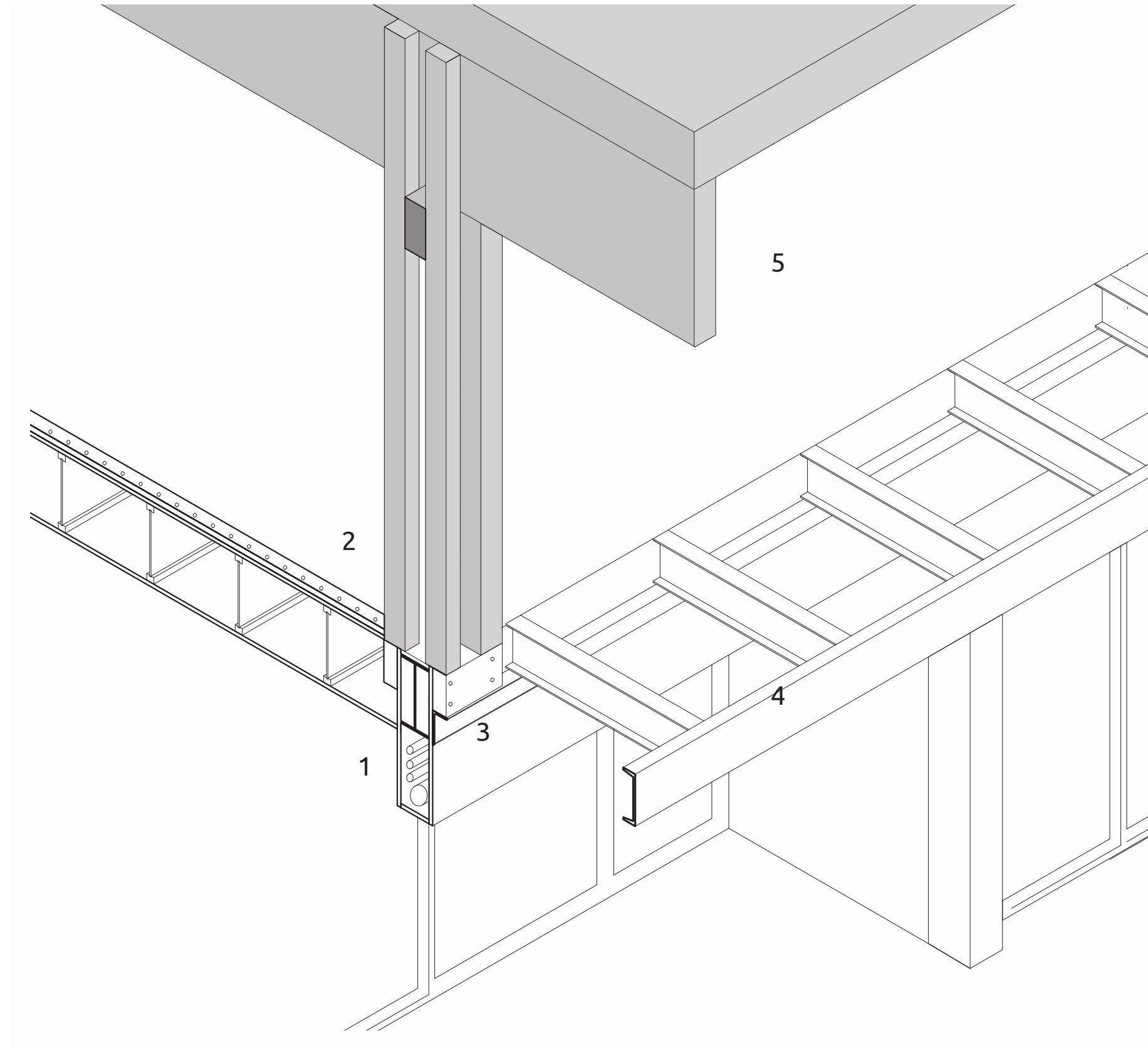
Substantiate Structuralism

Technical Booklet
Michelle Bettman



Detail F

Green roof and facade cladding



1 - New 420x180 steel I beam cladded in red-wood timber box with opening latch to access service cables.

2 - New IJC composite timber floor joist beams spanning between 90x 140mm red-wood laminated timber beams. Plywood floor-board. 70mm suspended screed with intergrated water piping system. Polished screed floor finish

3 - Base thickening of beam with timber blocks to support existing column above.

4 - Extension floor:

250mm L- profile steel edge beam.

Steel I-beam floor joist, 600mm spacing.

Steel floor plate (30min fireproof rating)

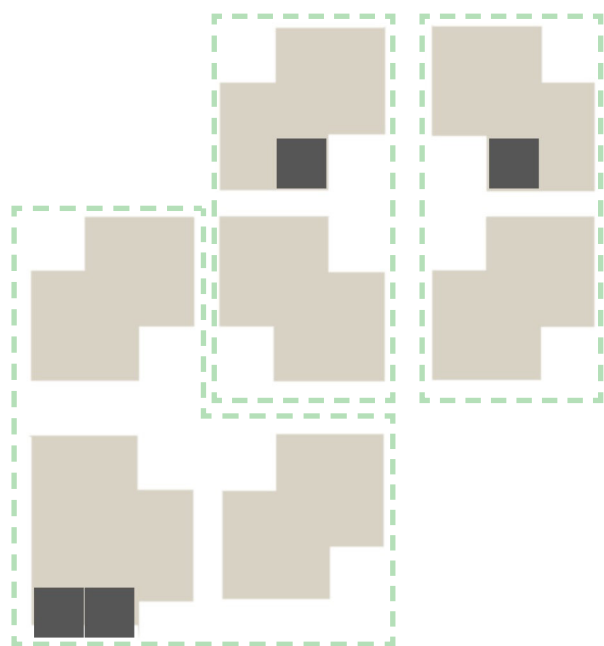
Acoustic floor insulation

Redwood floor boarding

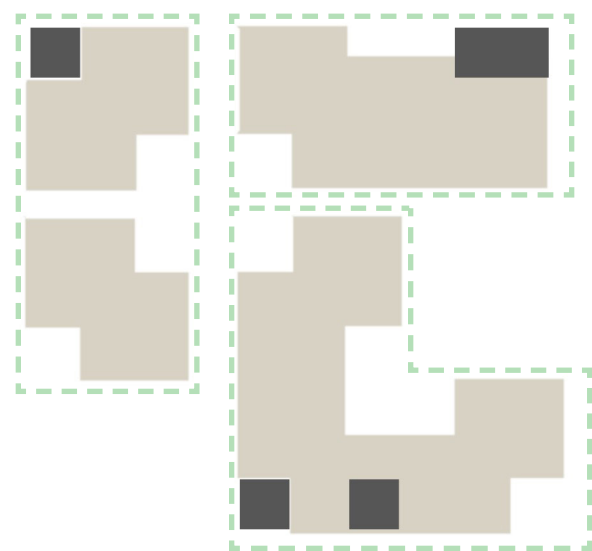
5 - Reused roof structure

Ventilation compartments

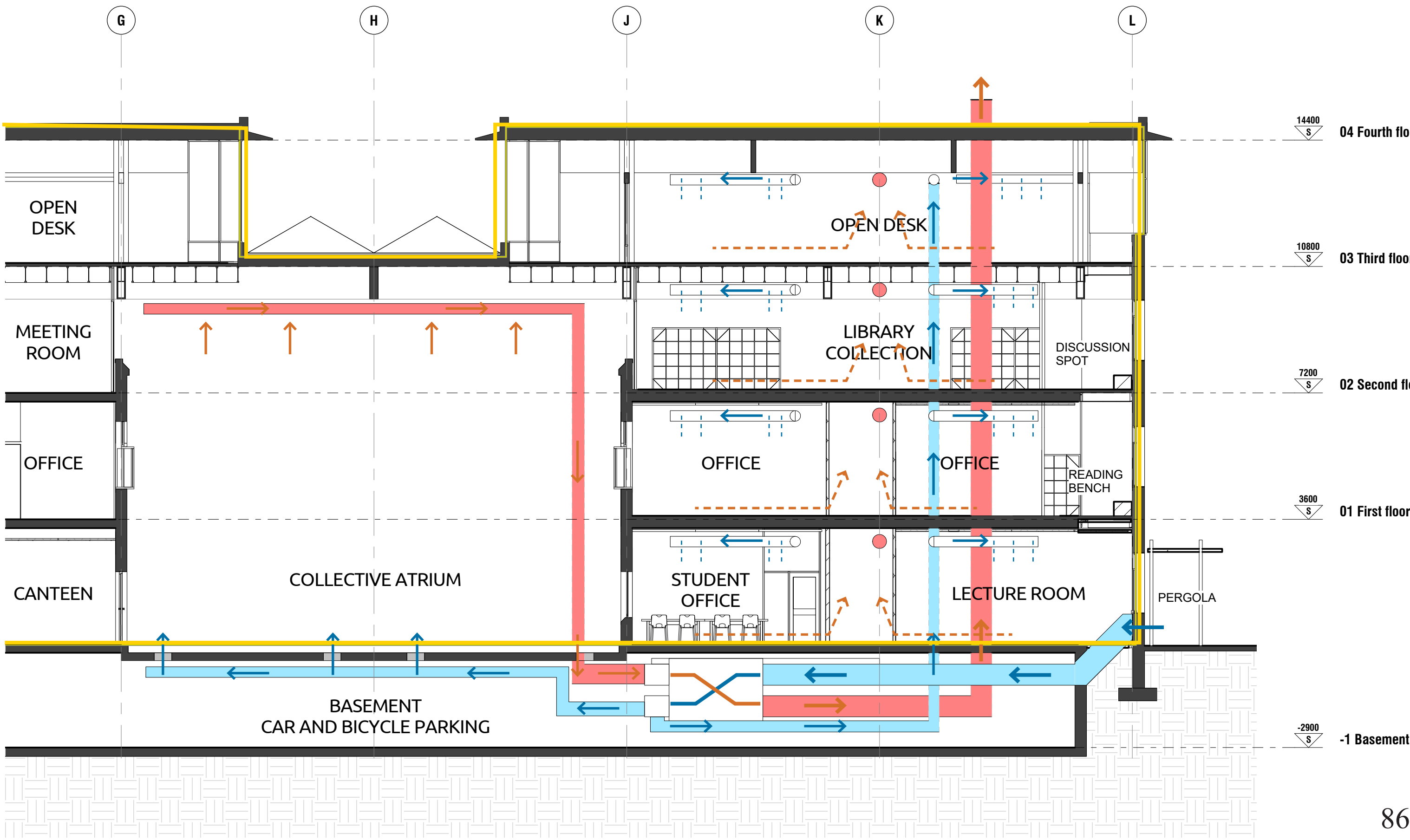
South cluster



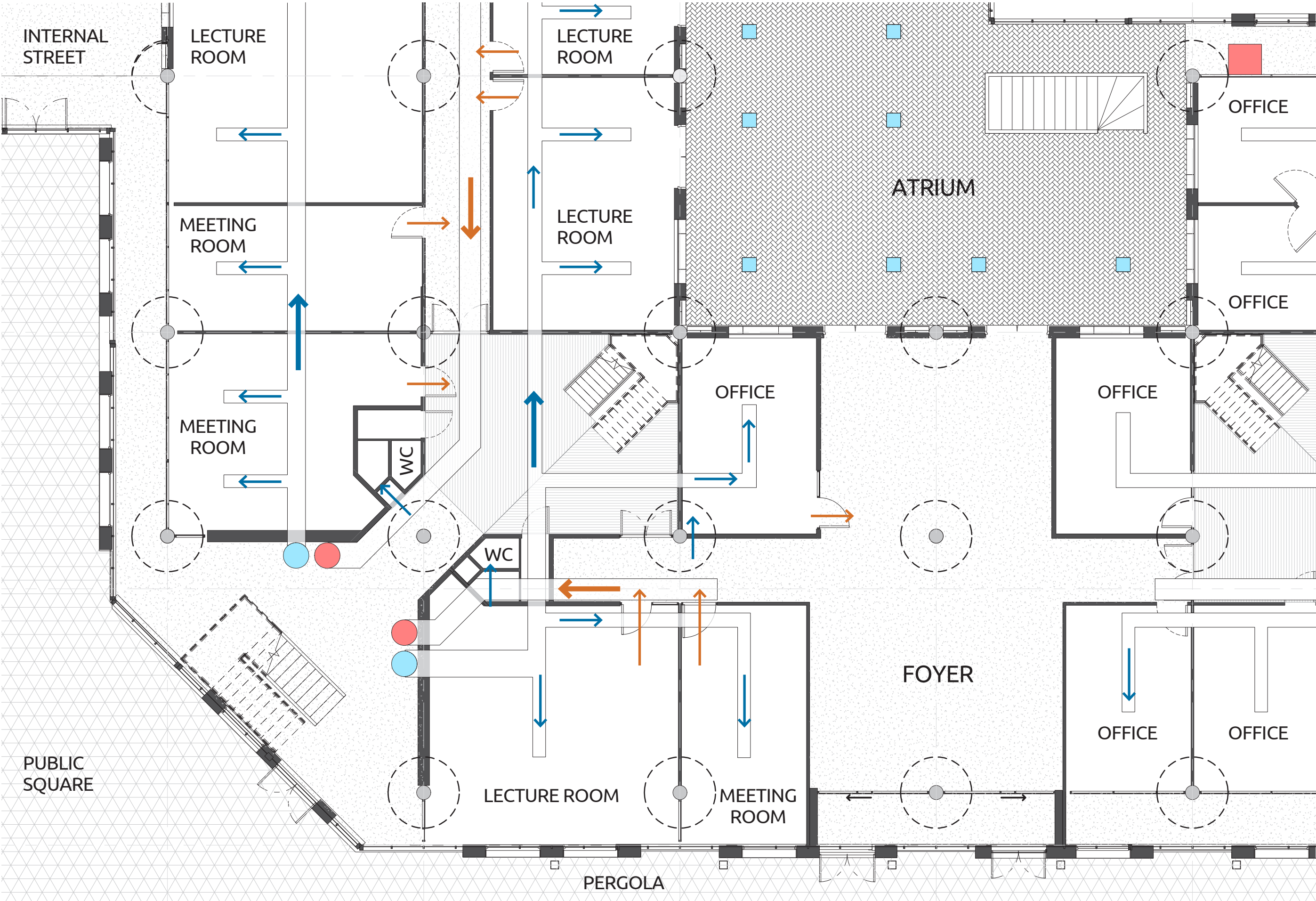
North cluster



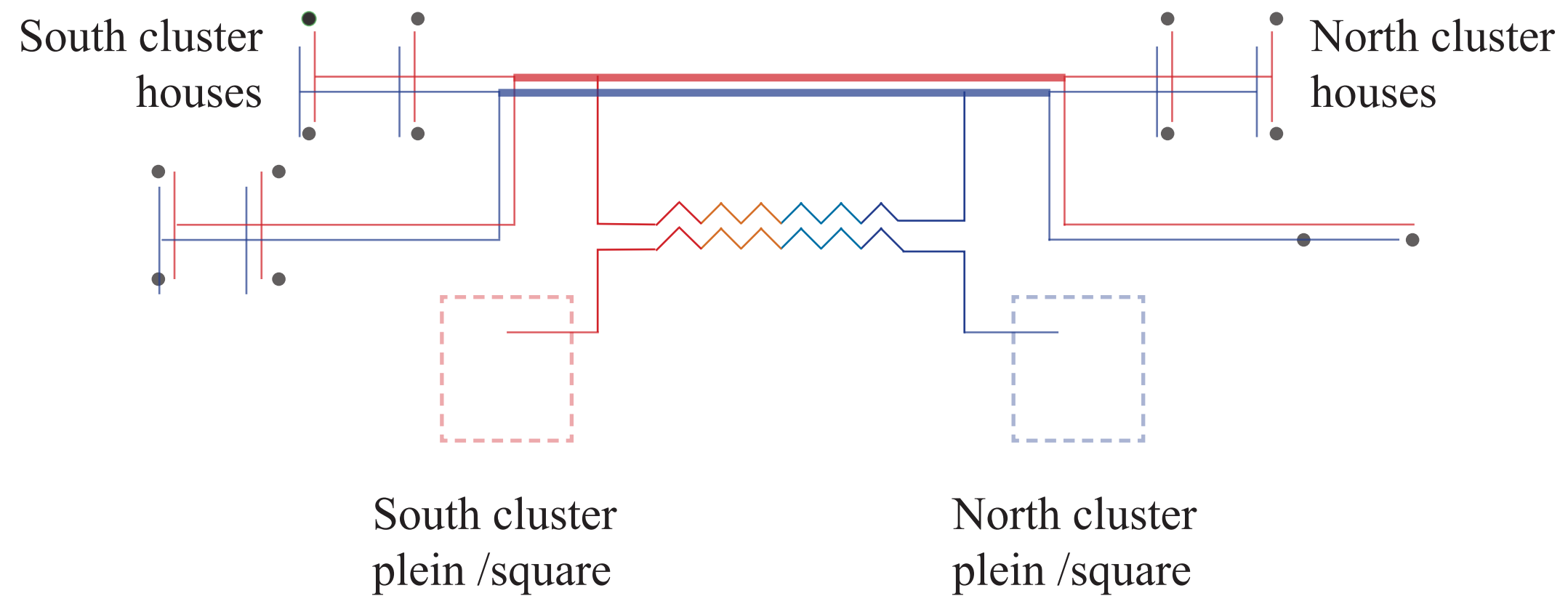
Ventilation section

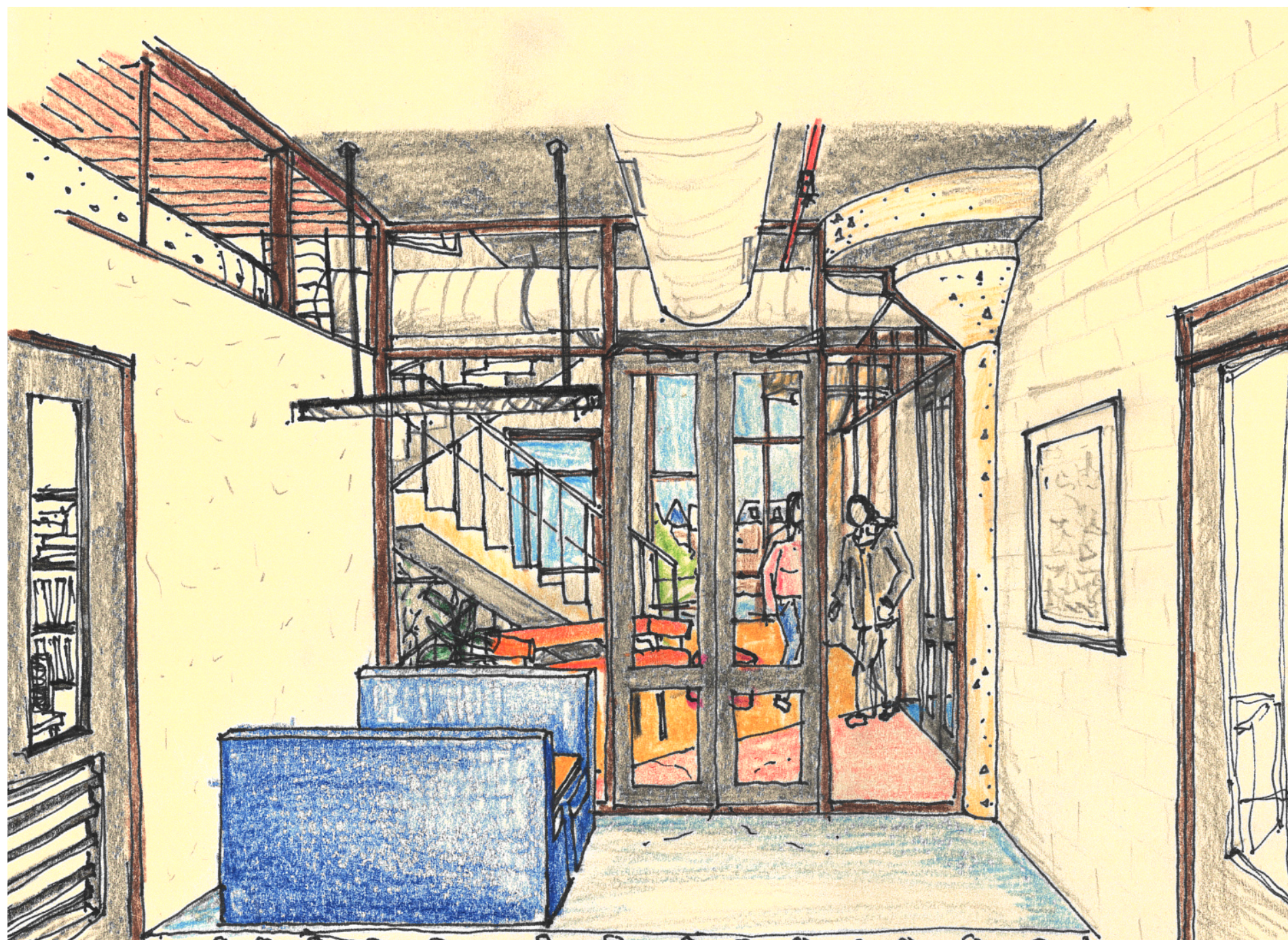


Ventilation plan

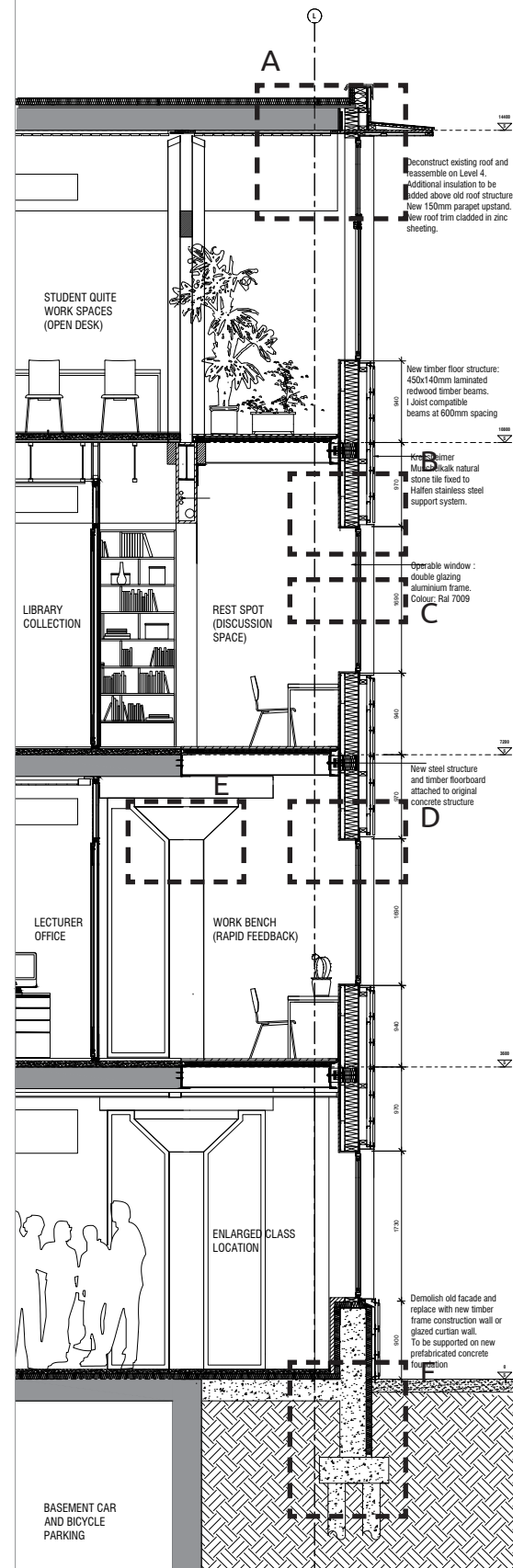


Heating and cooling aquifers



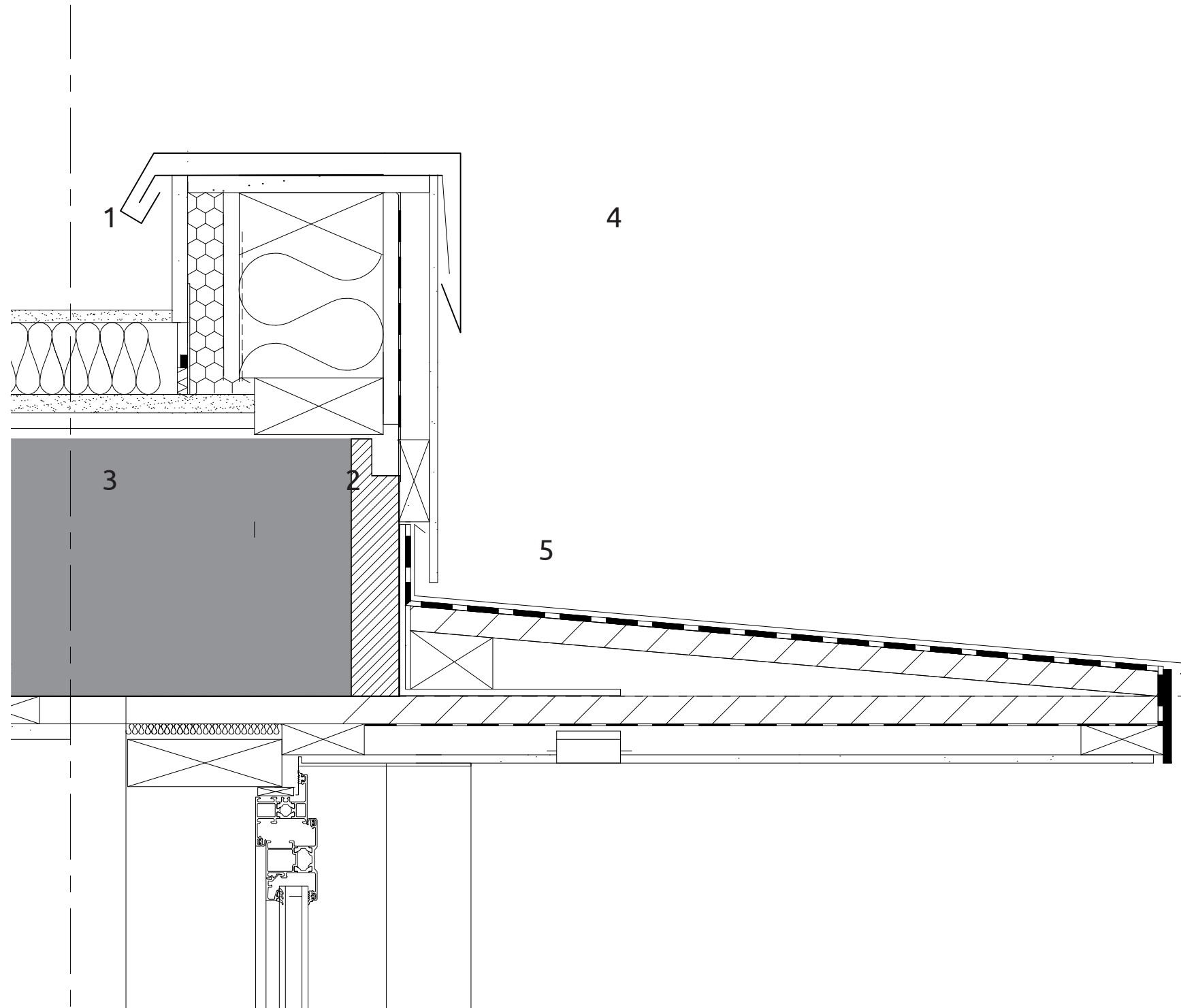


Scale 1:20



Detail A

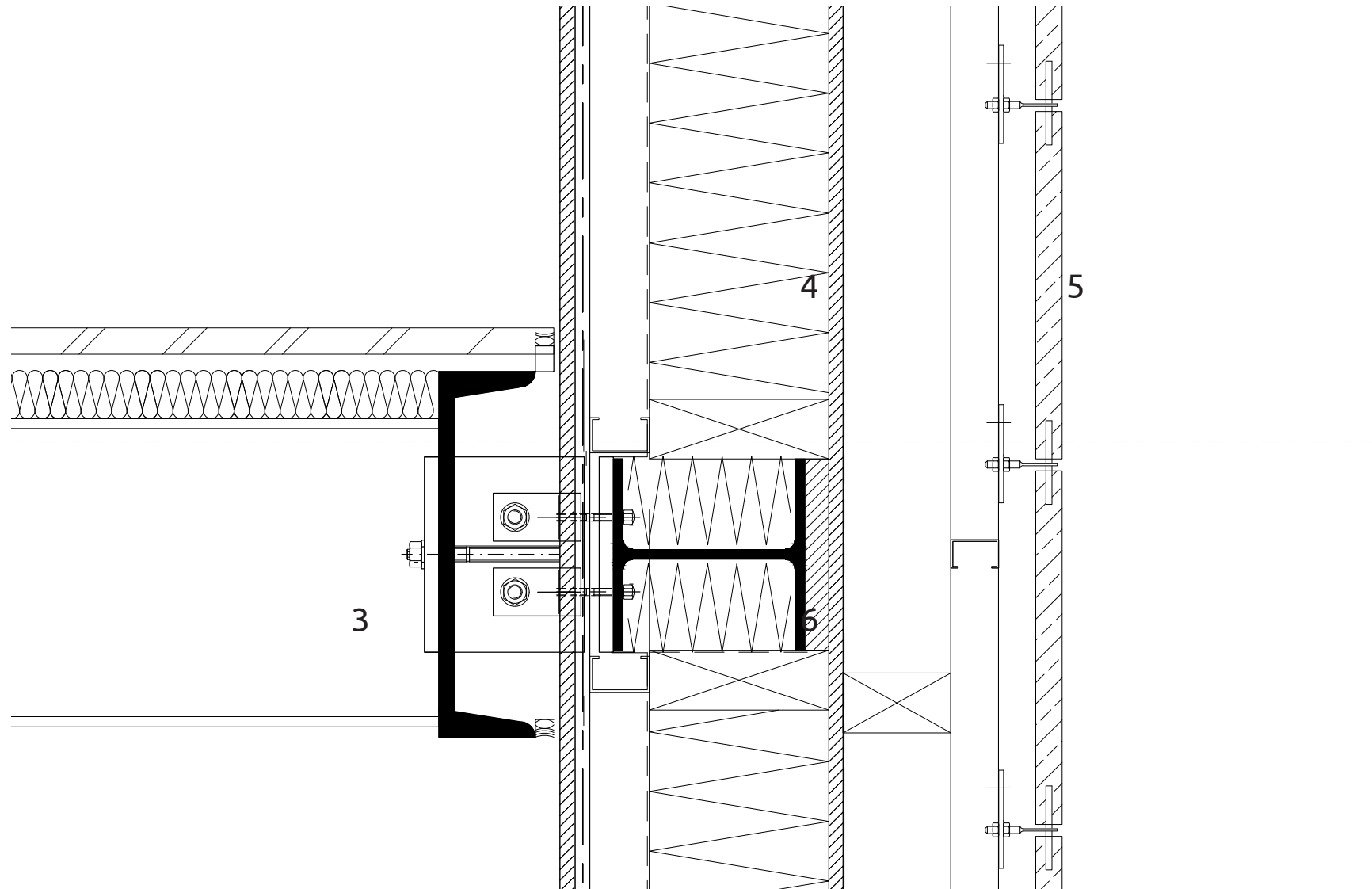
Reused and externally insulated roof edge



- 1 - Kingspan 60mm OPTIM-R roof insulation
- 2 - 47x100mm Existing timber upstand beam
- 3 - 214mm reused roof timber panels
- 4 - Zinc coping profile
- 5 - 22mm plywood timber cornice
- 6 - Steel L-profile connecting cornice to sandwich panel

Detail B

Green roof and facade cladding



3 - Added floor system:

- 65x250mm C channel beam
- 240mm I-profile steel beam
- Steel floor plate (30min fire proof rating)
- Acoustic insulation layer
- 22x100mm redwood wooden floor

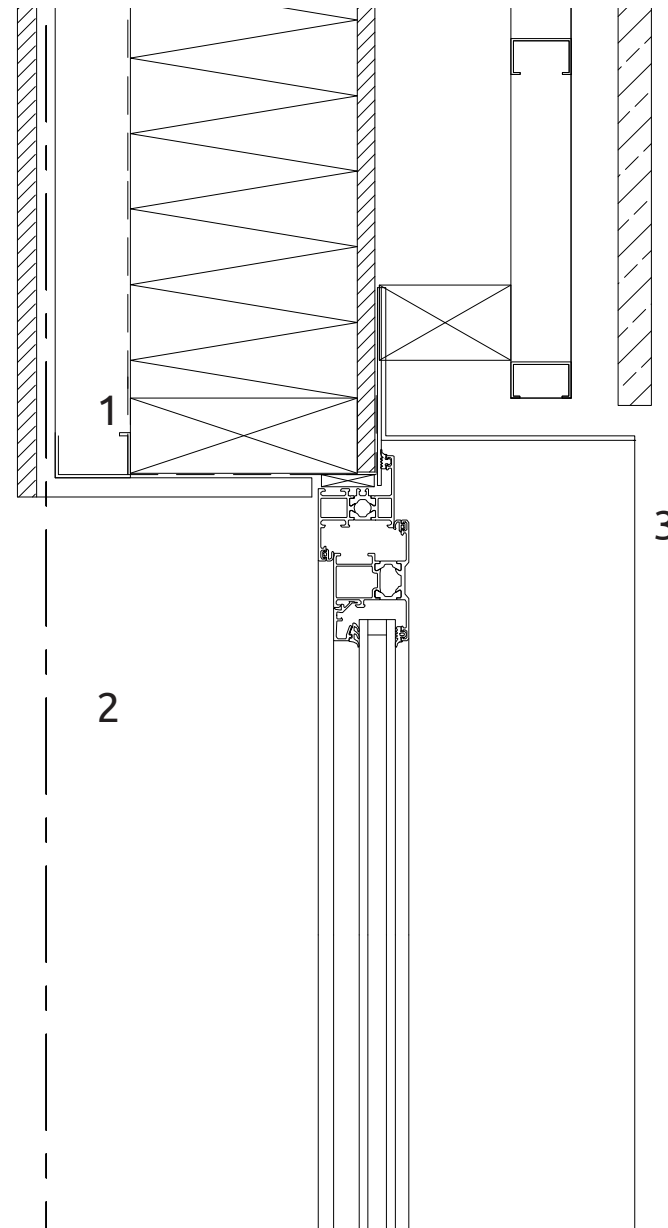
4 - Prefabricated timber wall sandwich panels (3600mmx1800mm)

5 - 450x300x47mm Muschkalk natural stone fastened to Halfon Aluminum frame

6 - Wall bracket to attach aluminum frame though closed aluminum wall panel to the C-channel beam

Detail C

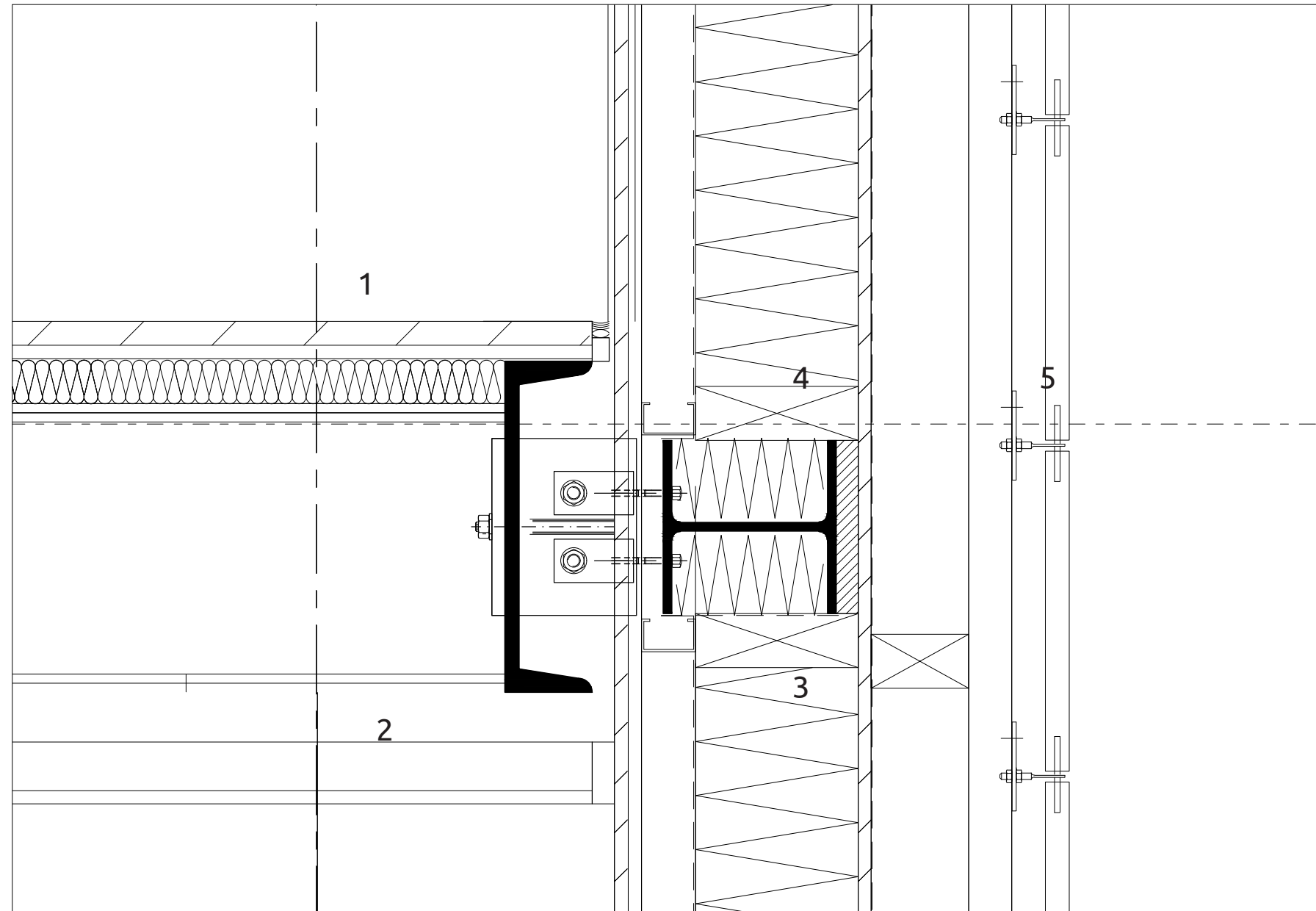
Operable window



- 1 - Stabalux ZL-S double glazed curtain wall facade system, midway small t profile mullion
- 2 - Operable double glazed sliding window
- 3 - Terracotta ceramic tile solar shading.

Detail D

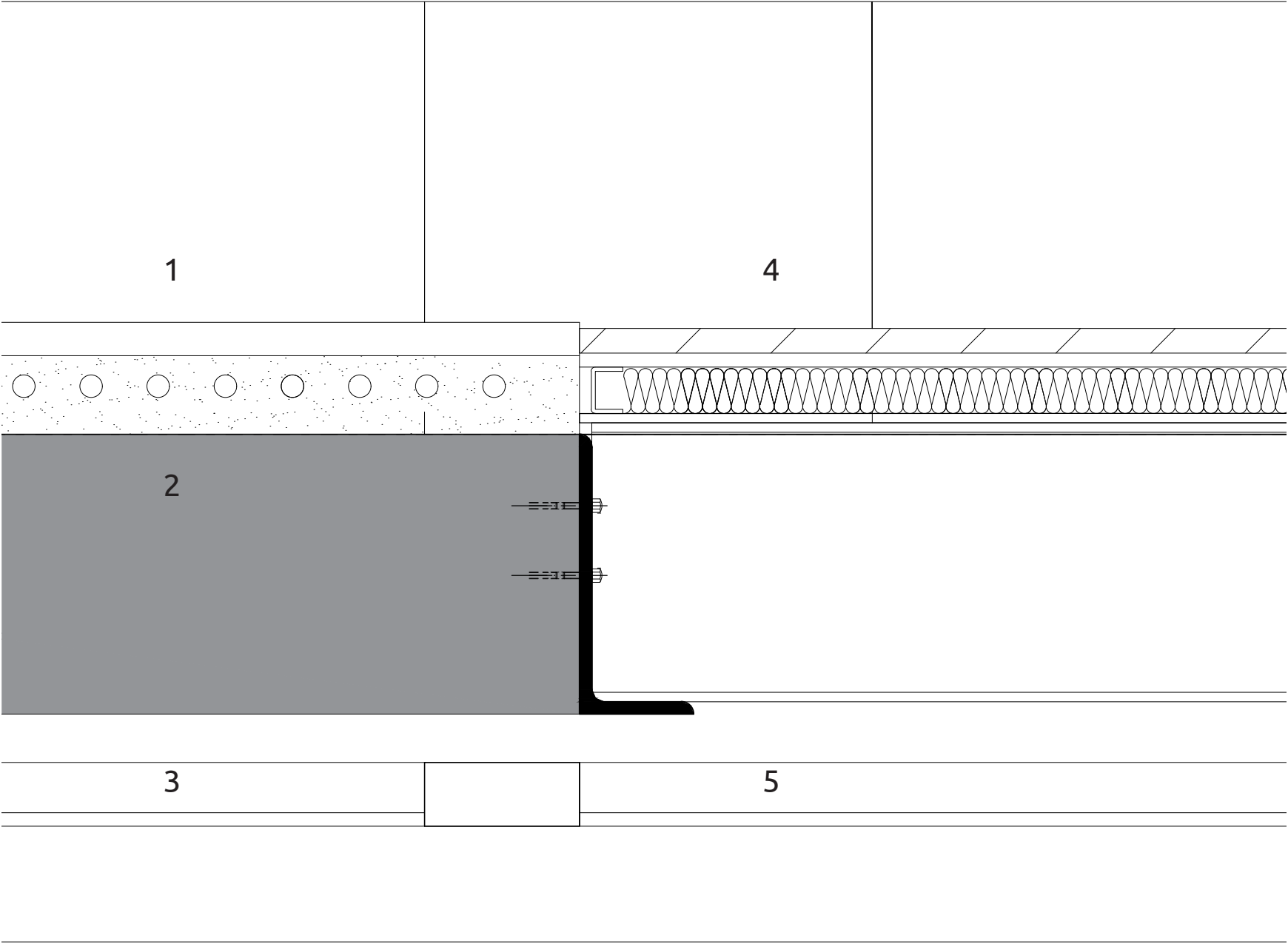
Floor extension and facade cladding



- 1 - Floor extension structure:
 - 65x250mm C channel beam
 - 240mm I-profile steel beam
 - Steel floor plate (30min fire proof rating)
 - Acoustic insulation layer
 - 22x100mm redwood wooden floor
- 2 - Suspended ceiling
- 3 - Wall bracket to attach aluminum frame though closed aluminum wall panel to the C-channel beam
- 4 - Prefabricated timber wall sandwich panels (3600mmx1800mm)
- 5 - 450x300x47mm Muschkalk natural stone fastened to Halfon Aluminum frame

Detail E

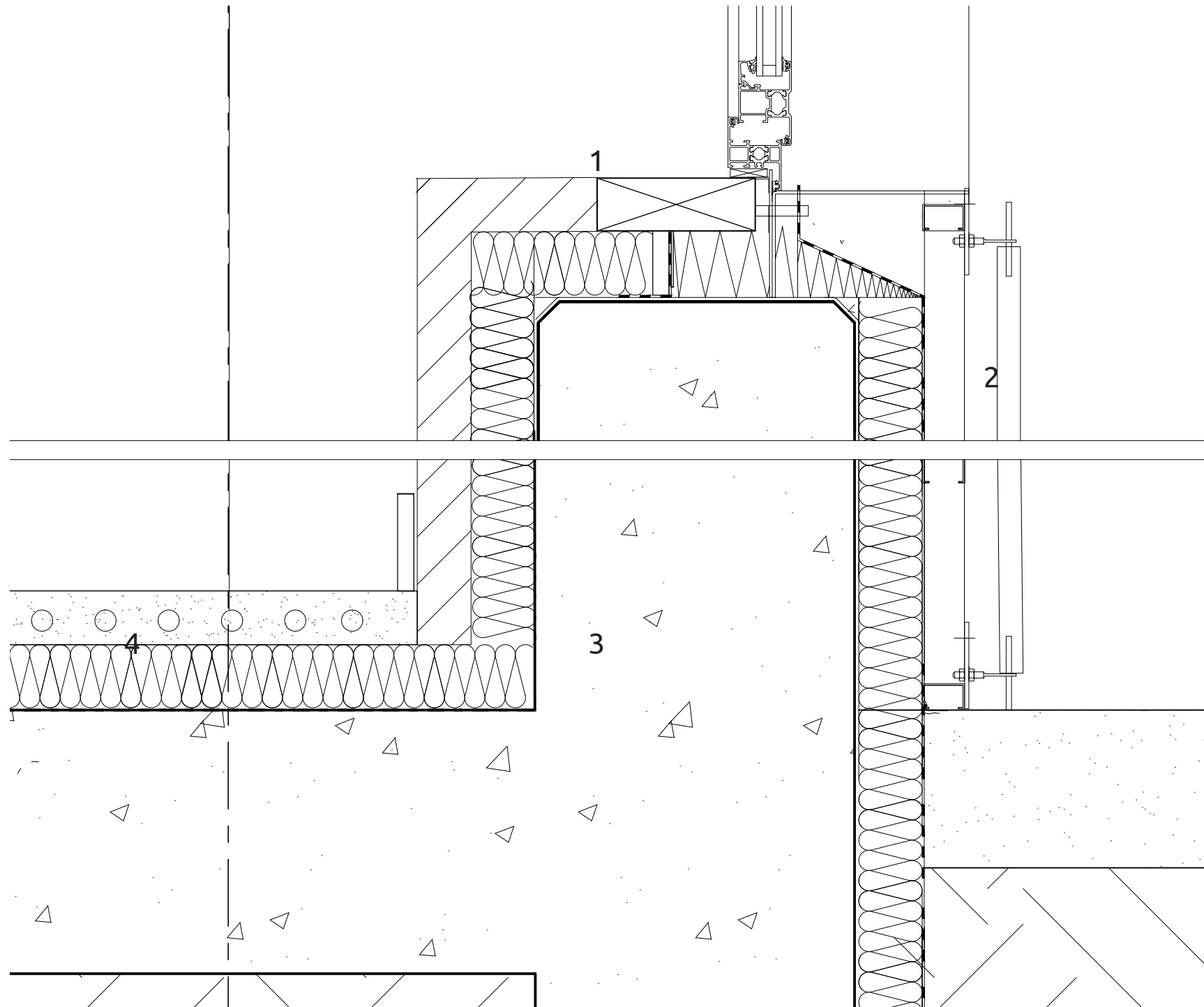
Steel floor fastened to concrete slab
(reference: *Reimagine the facade* - TuDelft)



- 1 - New 70mm floating screed. Heating and cooling waterpipes intergrated into floor. Polished screed floor finish.
- 2 - 225mm existing post tensioned concrete floor slab
- 3 - Existing redwood timber ceiling
- 4 - Extension floor:
 - 250mm L- profile steel edge beam.
 - Steel I-beam floor joist, 600mm spacing.
 - Steel floor plate (30min fireproof rating)
 - Acoustic floor insulation
 - Redwood floor boarding
- 5 - New ceiling

Detail F

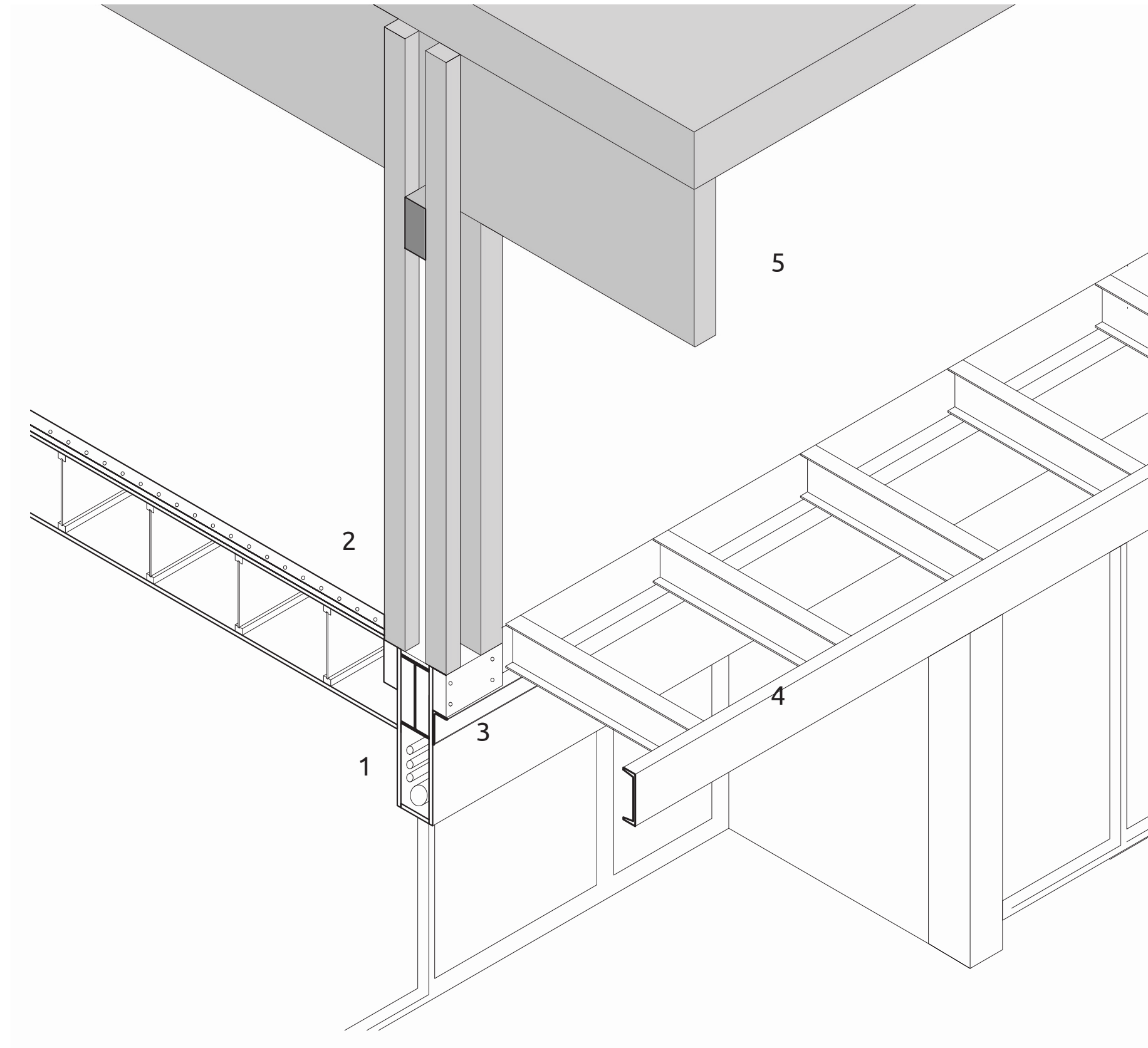
Green roof and facade cladding



- 1 - Double glazed operable window
- 2 - 450x300x47mm Muschkalk natural stone fastened to Halfon Aluminum frame
- 3 - Concrete foundation prefabricated
- 4 - New 70mm floating screed. Heating and cooling waterpipes intergrated into floor. Linoleum floor finish. 100mm Insulation layer ontop of new concrete floor slab

Detail G

Green roof and facade cladding



1 - New 420x180 steel I beam cladded in red-wood timber box with opening latch to access service cables.

2 - New IJC composite timber floor joist beams spanning between 90x 140mm red-wood laminated timber beams. Plywood floor-board. 70mm suspended screed with intergrated water piping system. Polished screed floor finish

3 - Base thickening of beam with timber blocks to support existing column above.

4 - Extension floor:

250mm L- profile steel edge beam.

Steel I-beam floor joist, 600mm spacing.

Steel floor plate (30min fireproof rating)

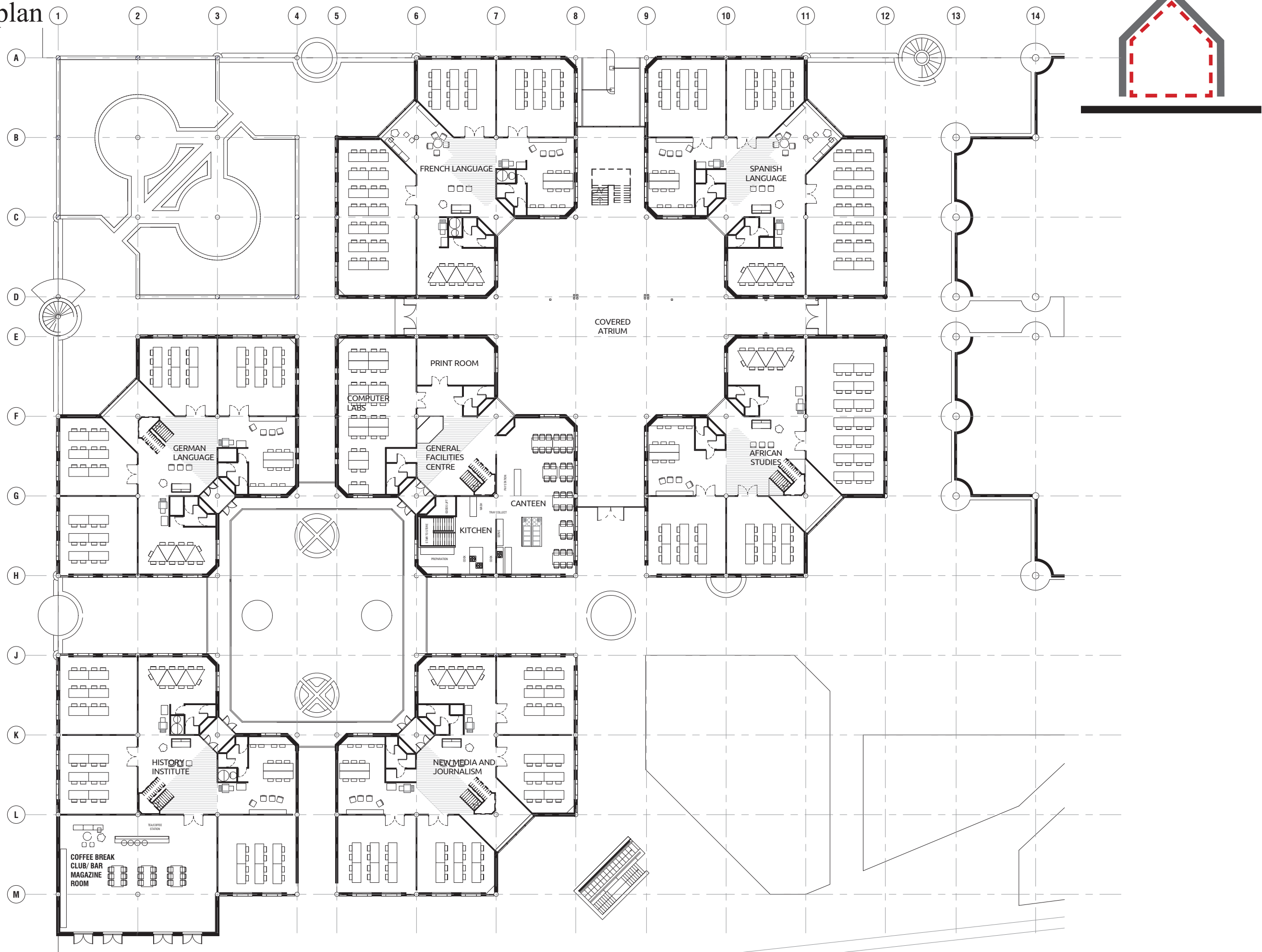
Acoustic floor insulation

Redwood floor boarding

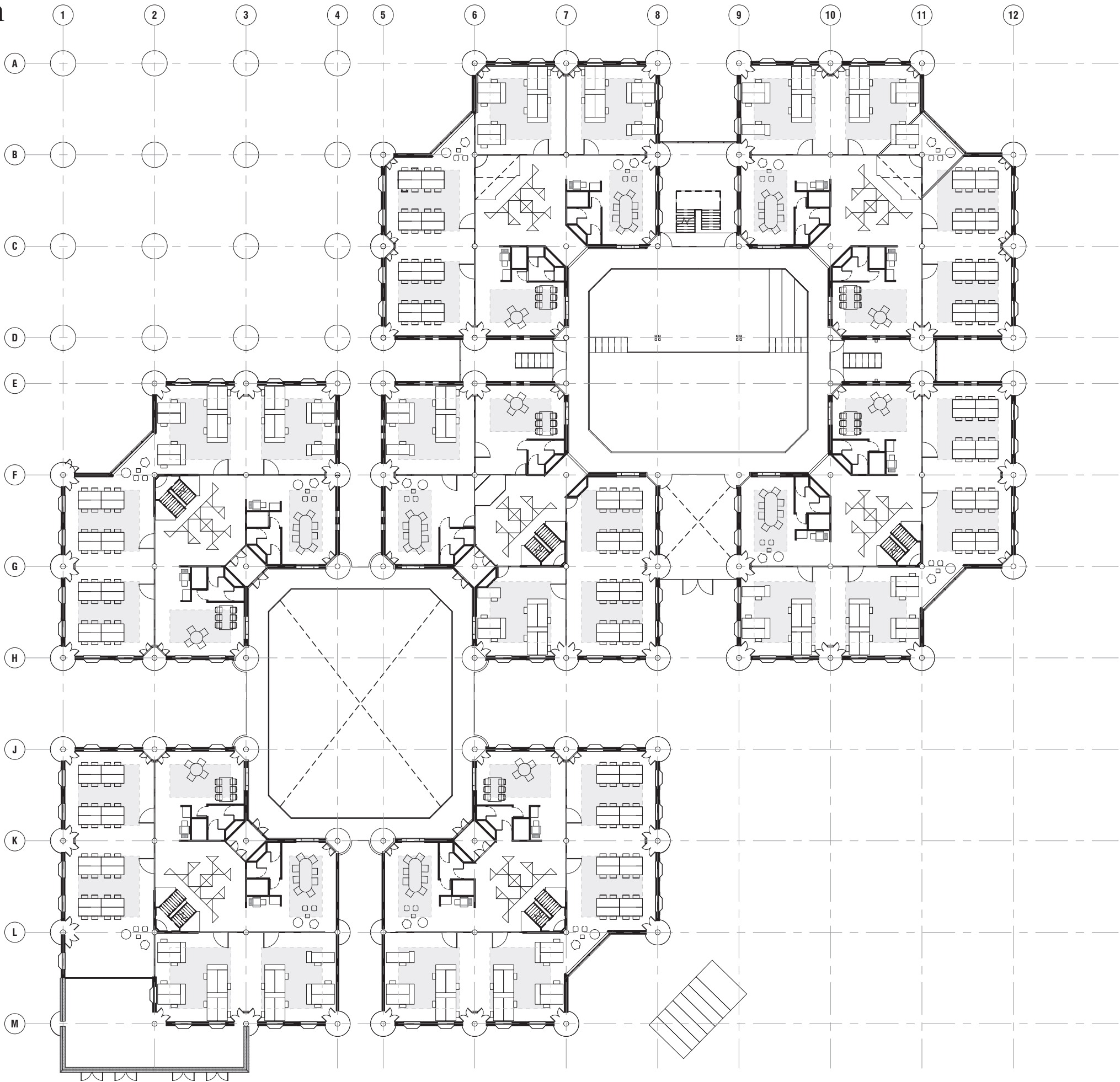
5 - Reused roof structure

South cluster

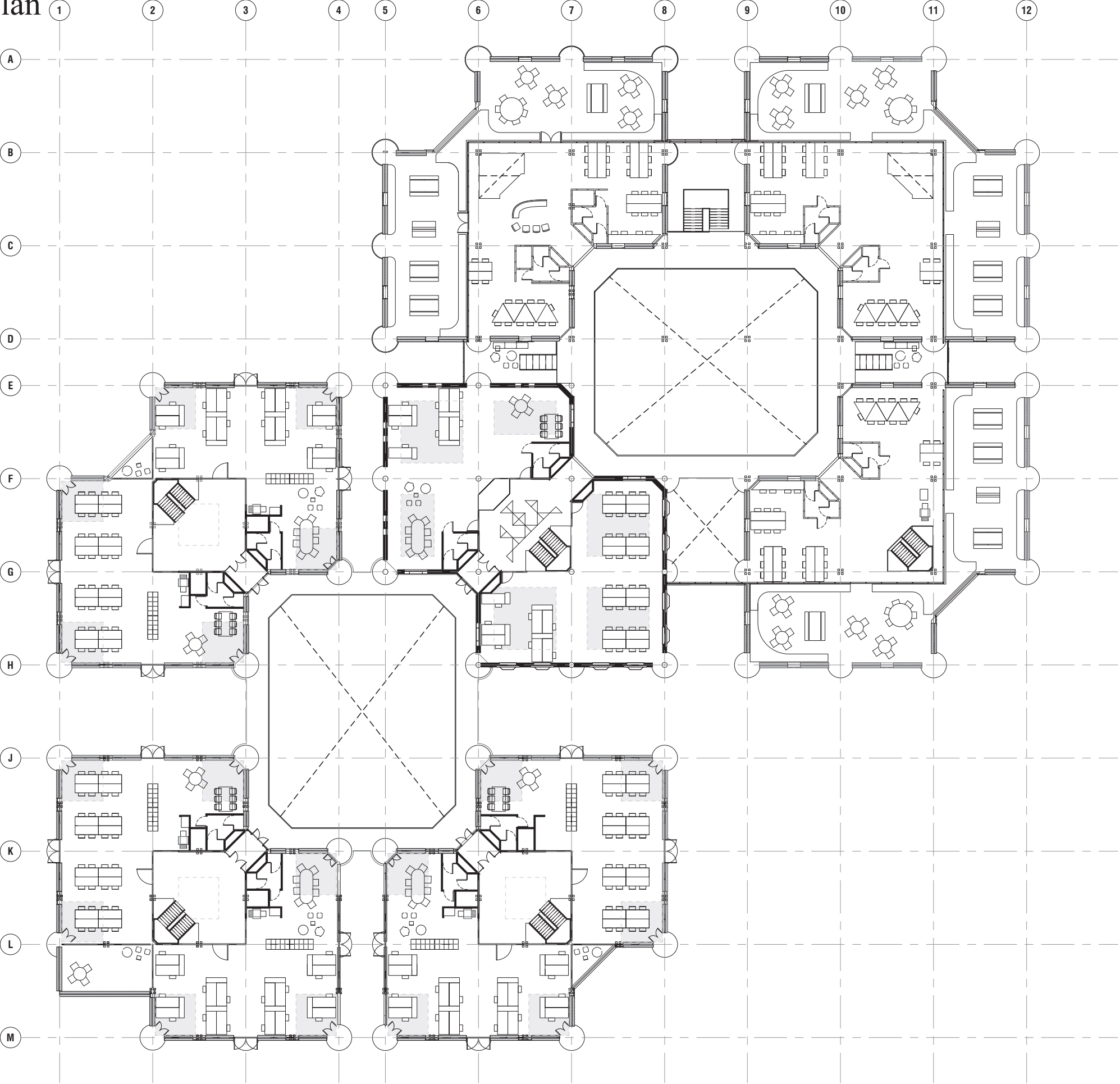
Ground floor plan



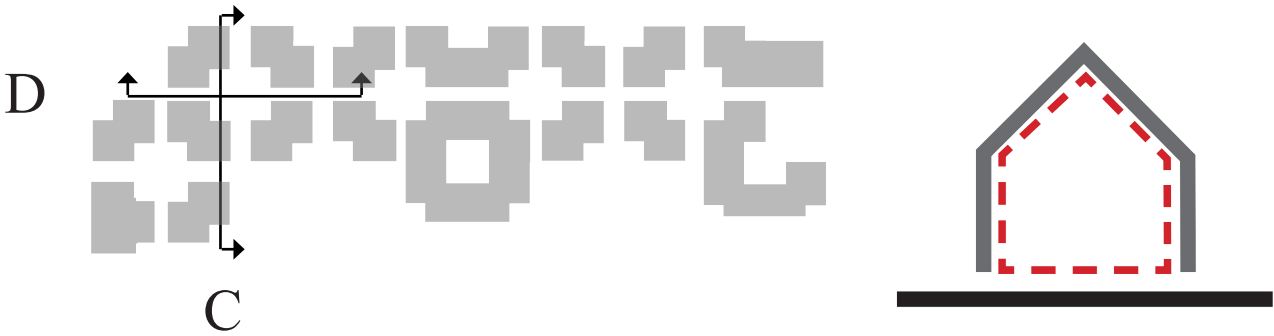
South cluster
First floor plan



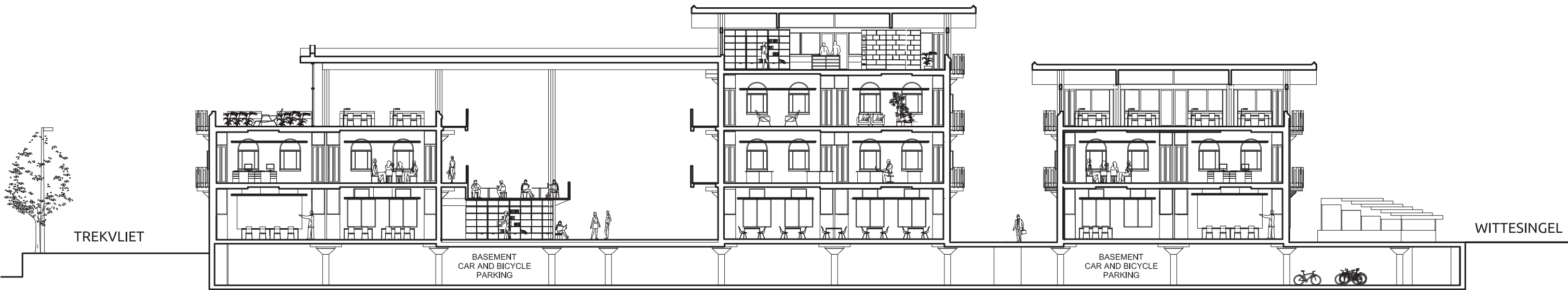
South cluster
Second floor plan



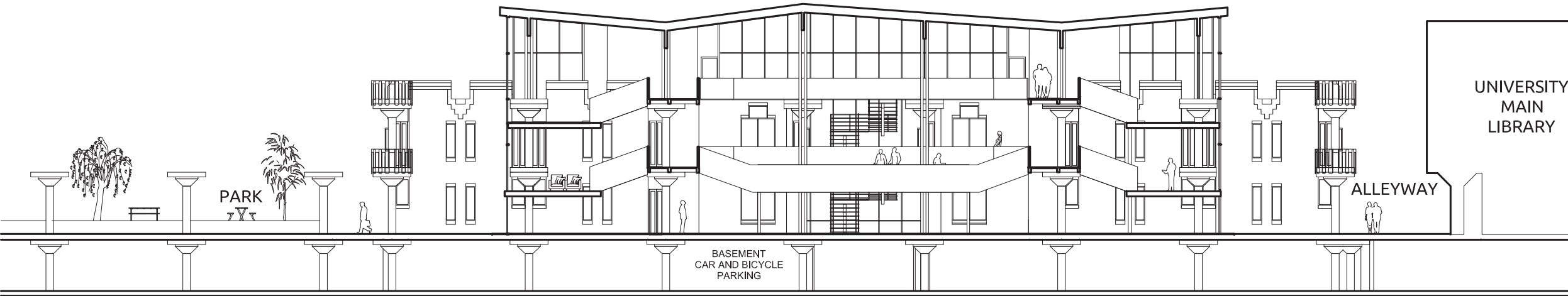
South cluster



Section C - C, Scale 1:250

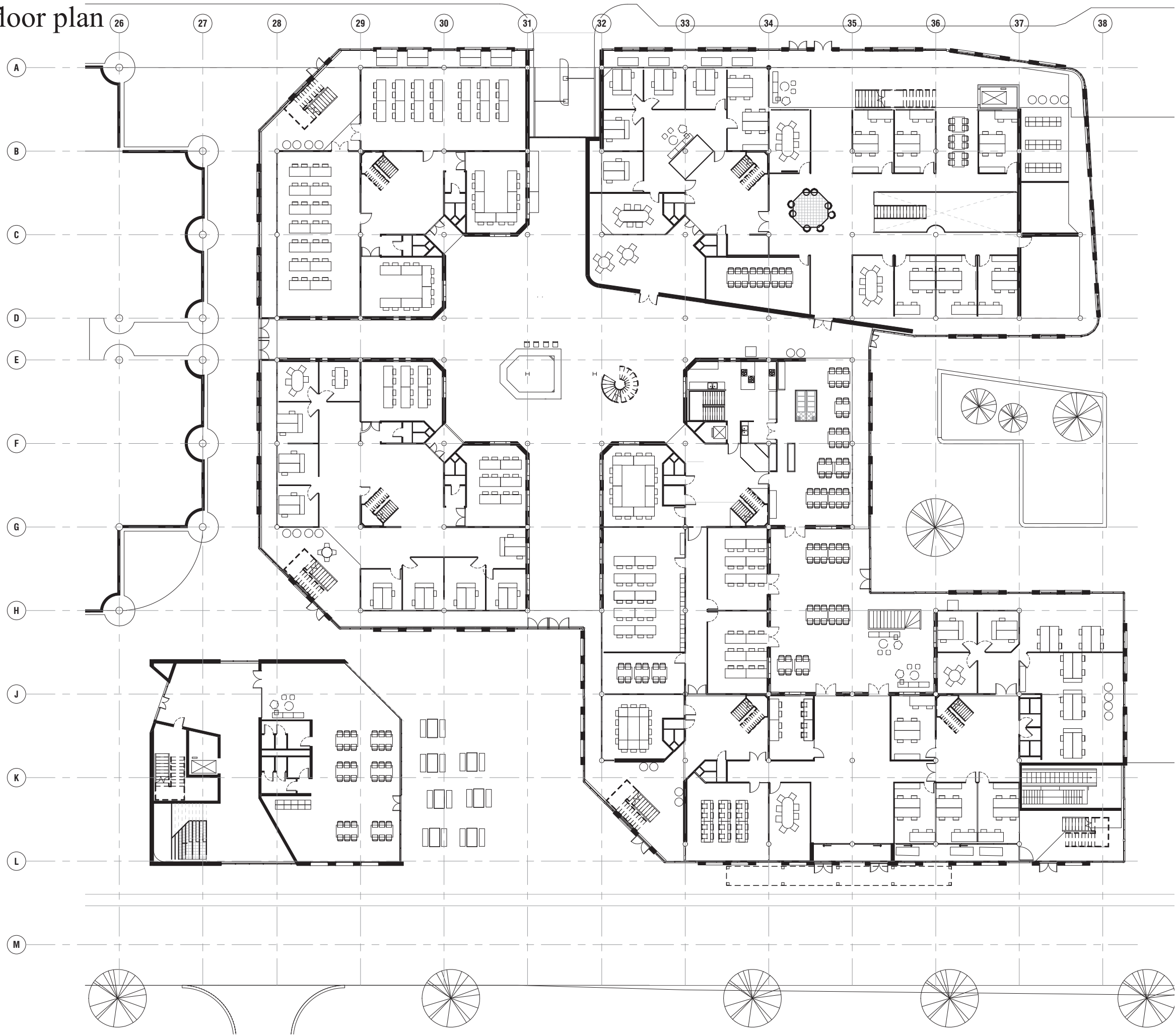


Section D - D, Scale 1:250



North cluster

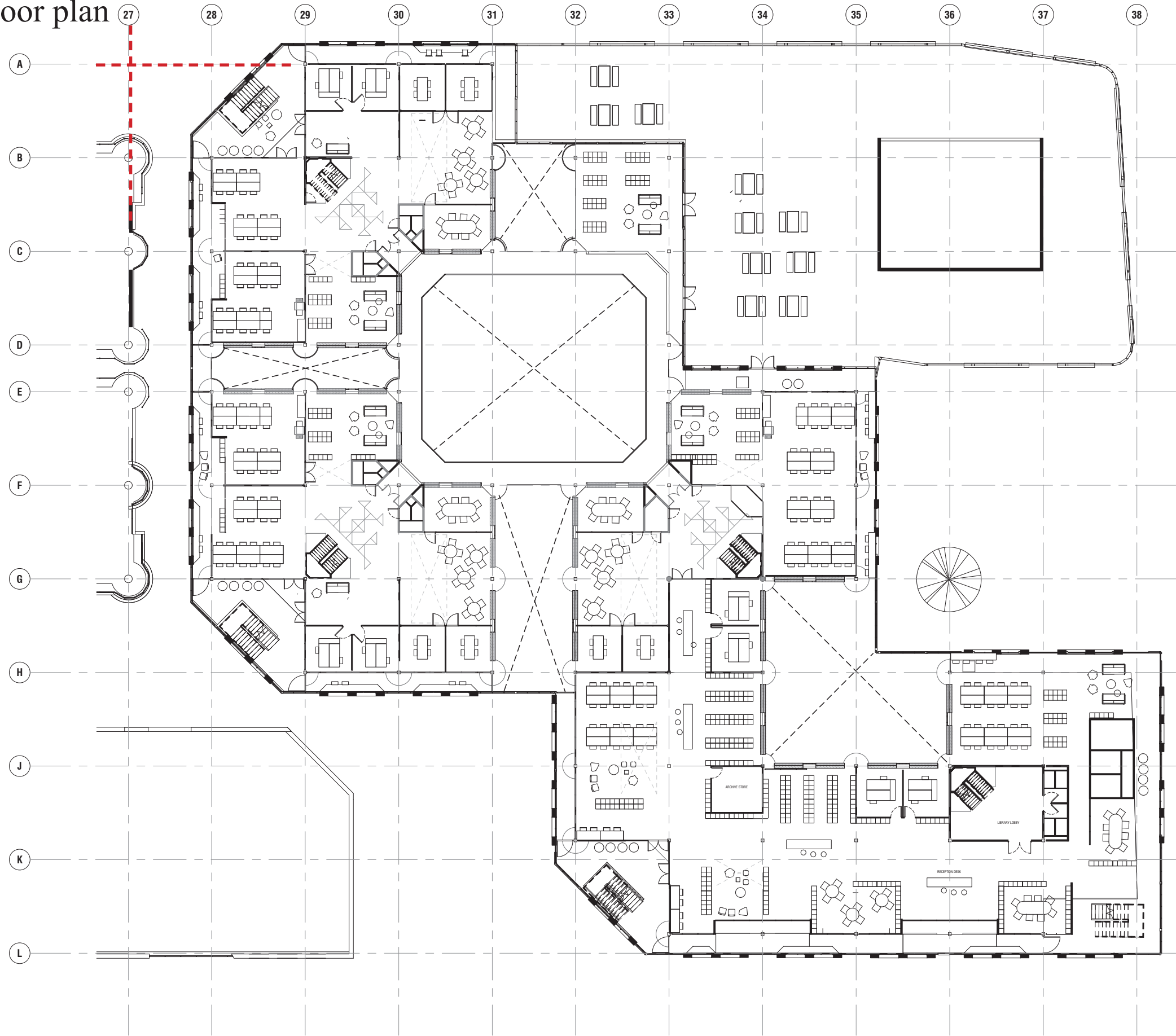
Ground floor plan



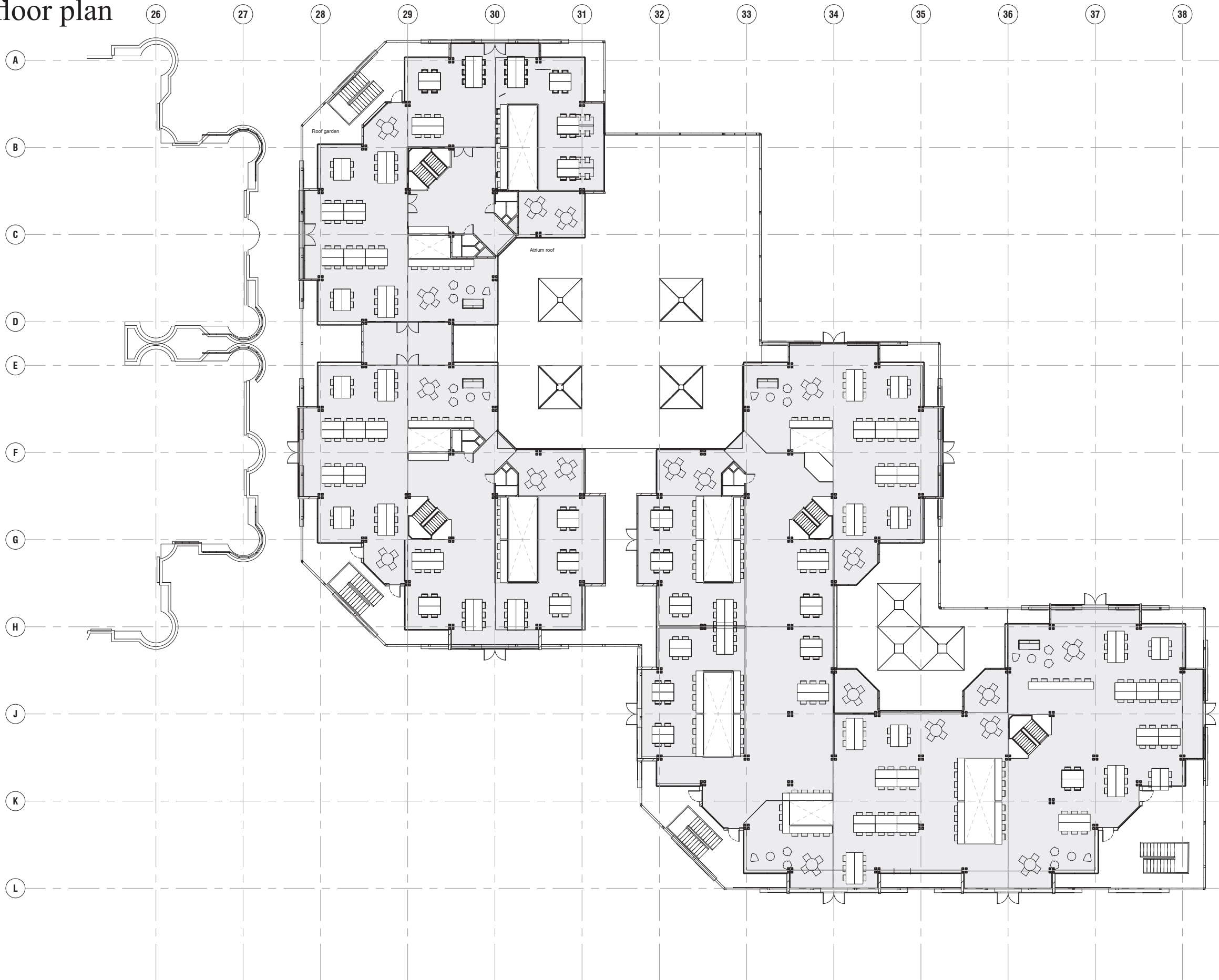
North cluster
First floor plan



North cluster
Second floor plan

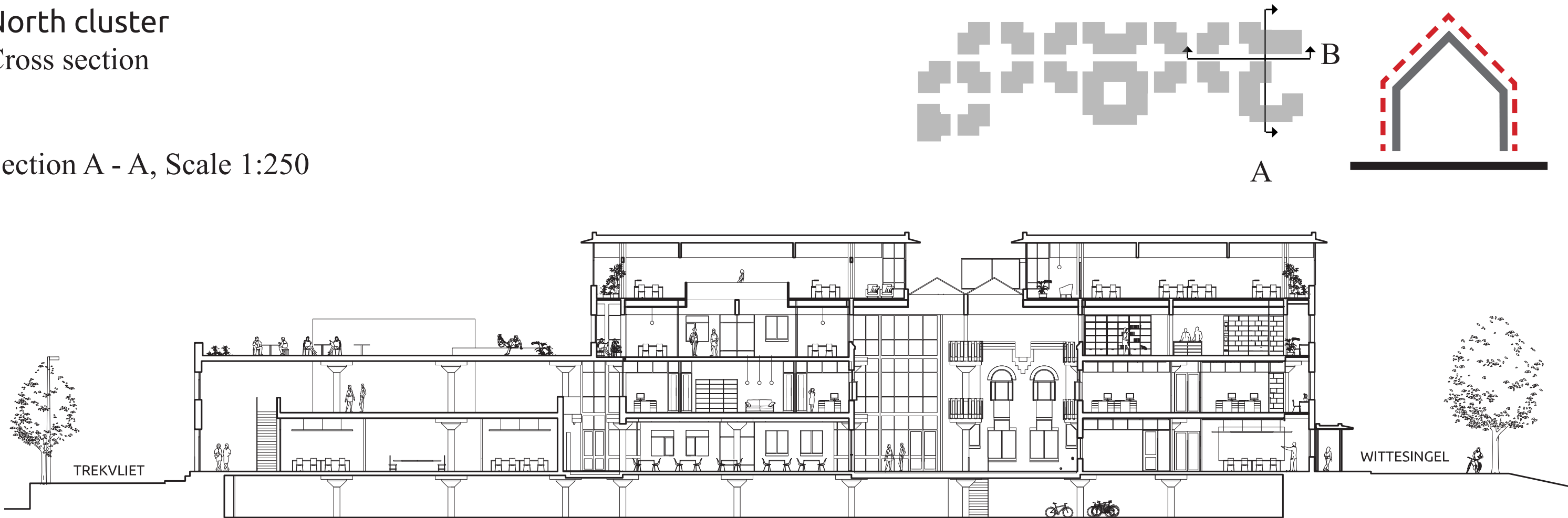


North cluster
Third floor plan

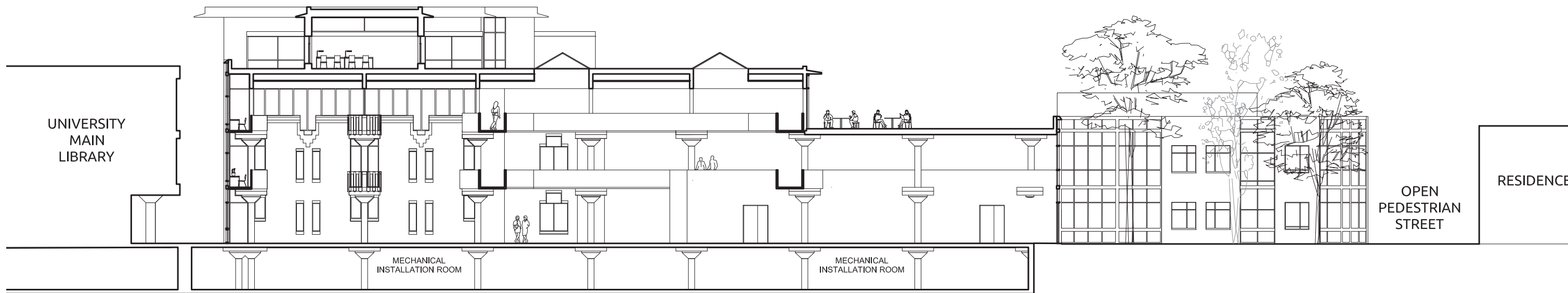


North cluster
Cross section

Section A - A, Scale 1:250



Section B - B, Scale 1:250



Substantiate Structuralism

Sketch Booklet - North Cluster
Michelle Bettman

Substantiate Structuralism

Sketch Booklet - South Cluster
Michelle Bettman